

MARCH 30, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

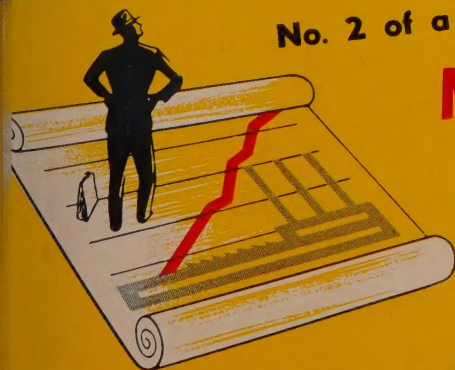


No. 2 of a Management Series . . .

Mr. "B" Looks to Washington

You can help put more business in government
and less government in business — p. 53

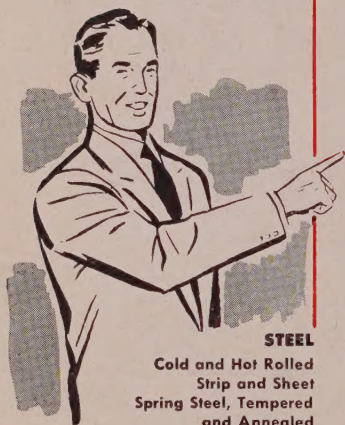
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Have You Received YOUR Copies of the NEW **KORHUMEL** **SPRING STEEL** and **ALUMINUM**

Special Stock Lists?

Another example of
Korhumel Personalized
Warehouse
Service . . .



STEEL

Cold and Hot Rolled
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Spring Steel, Tempered
and Annealed
Feeler Gauge
Round Edge Flat Wire
Shim Steel
Electro Galvanized
Electrical Sheets
Tin Plate
Cold Finished Bars
Tubing, Seamless, Welded
Rigidtex Stainless
Hydraulic Tubing

ALUMINUM

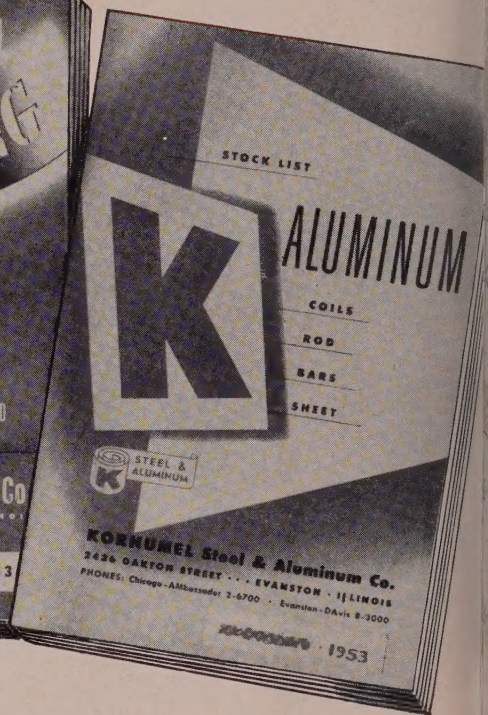
Strip and Sheet
Coils
Straight Lengths
Bars

PHOSPHOR BRONZE

Coils and Flats

SERVICES

Slitting
Shearing
Edge Rolling
Bright Annealing
Cold Rolling
Ungerer Roller Leveling



Here are two new handy guides to help you simplify and speed up selection, specifying and ordering of spring steel and aluminum. These two new Korhumel stock lists were especially designed to make your job easier. They are exceptionally easy to use . . . they are up-to-date and periodically revised to keep them up to date. Stock lists on all other Korhumel products will be available shortly . . . they too, will be prepared to make your job easier. Just another example of what the "Personalized" means in Korhumel Personalized Warehouse Service.

Why not write for your free Stock List copies today? We will add your name to our regular stock list mailing list.

KORHUMEL

STEEL & ALUMINUM CO.

2426 OAKTON STREET, EVANSTON, ILLINOIS

Warehouses or Sales Offices in Bridgeport • Cincinnati • Denver • Des Moines • Detroit • Grand Rapids • Indianapolis • Kansas City • Los Angeles • Milwaukee • Minneapolis • New York • Rockford • St. Louis • South Bend

CHICAGO Phone: AMBassador 2-6700 • Evanston Phone: DAvis 8-3000

They Haul Oil, Machinery and Ice Cream

Yet They have One Advantage in Common



Mayari R
makes it
*lighter...
stronger...
longer lasting*

It would be hard to select three vehicles that vary more in design and purpose than these. But dissimilar as they are, they all share one important feature—each is built with low-alloy, high-strength Mayari R.

There seems to be no limit on the types of trucks, trailers and other highway vehicles that can be built better with this versatile steel. In some instances vehicle designers are interested primarily in increasing strength; in some they are interested solely in reducing deadweight without sacrificing strength; in others they aim at a middle course by combining a moderate increase in strength with a corresponding reduction in deadweight. Engineers have their choice when they work with Mayari R.

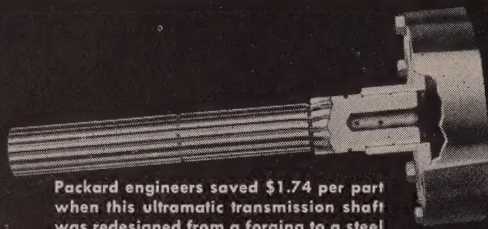
Another thing that can be counted on with this steel is increased resistance to atmospheric corrosion. Mayari R will resist corrosion damage 5 to 6 times longer than plain carbon steel of equal gage. It will also retain paint up to 80 pct longer, depending upon the composition of the paint used.

Get more information on Mayari R. Take advantage of its properties to improve your present designs. Our Catalog 259 will explain Mayari R features and applications in detail.

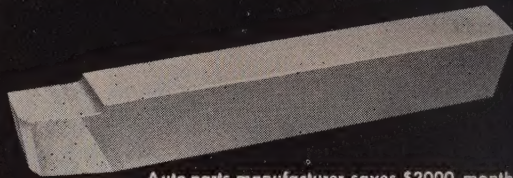
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. *Export*
Distributor: Bethlehem Steel Export Corporation

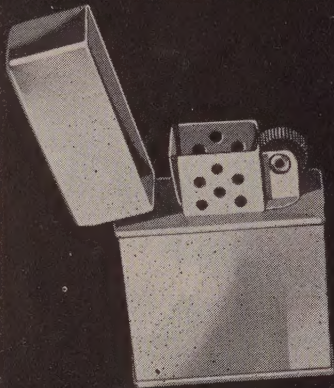




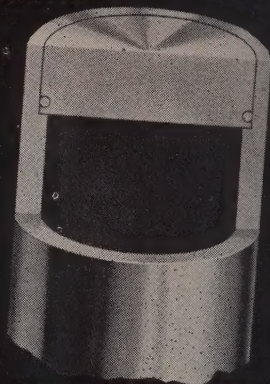
Packard engineers saved \$1.74 per part when this ultramatic transmission shaft was redesigned from a forging to a steel shaft and casting. They saved \$74,325 in equipment and tooling, too.



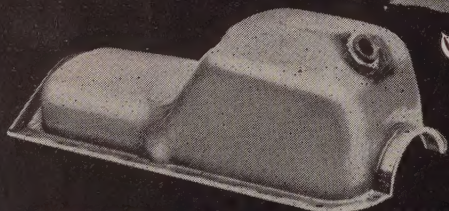
Auto parts manufacturer saves \$2000 monthly brazing shanks on hi-speed lathe tool stubs. Formerly these \$17.00 tools had to be discarded when worn down to 4". Now they use up 100% of the tool.



American Emblem Co. reduced solder cost 50%; cut repairs and rework due to misalignment of parts 98% and doubled output when they switched from hand soldering to automatic TOCCO soldering.



Commercial Shearing and Stamping Co. changed from welding to TOCCO brazing these hydraulic cylinder assemblies and doubled production while cutting unit costs 50%.



Nash Motors changed from a hand torch to TOCCO Induction brazing of drain flanges to oil pans. Labor and material costs dropped from \$12.75 to \$4.90 per hundred—a cut of 60%. Hourly production more than tripled.



Norris-Thermador Corporation switched from arc welding to TOCCO Induction Brazing of this bushing and clamp assembly. Result: costs reduced from \$46.44 to \$31.73 per 1000 parts—a 32% saving.

Here's how you can save time and money with **TOCCO*** Induction Brazing

If your product involves brazing, heat-treating, forging or melting of ferrous or non-ferrous metals, similar savings of time and money can

probably be uncovered in your plant, too. A TOCCO engineer is glad to survey your plant without obligation, of course.

THE OHIO CRANKSHAFT COMPANY

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BULLETIN**

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Dept. S-3, Cleveland 1, Ohio

Please send free copy of "Typical Results of TOCCO Induction Brazing and Soldering."

Name

Position

Company

Address

City Zone State



TOCCO

*Trade Mark Reg.
U. S. Pat. Off.

STEE

OSBORN



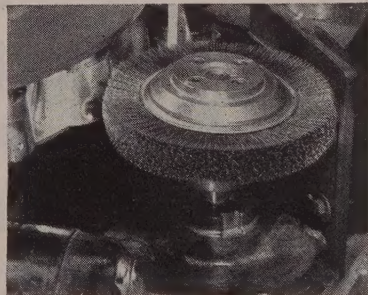
Brush C deburrs bottom of slot

Push-button brushing deburrs 1400 parts per hour

The Problem here was to remove feather burrs from a machined part in aluminum ammunition components . . . fast. By a hand method, output was only 360 per hour and results were not uniform.

With the help of the **Osborn Brushing Analyst**, the company built the rotating fixture shown above, equipped with three Osborn Master® Wheel brushes. Parts are placed on pins on clockwise-rotating table. Brush A, rotating clockwise, deburrs the corner of one side of slot. Brush B, rotating counterclockwise, deburrs the other side corner. Brush C deburrs the bottom corner. Slots come clean and smooth . . . at a rate of 1400 per hour!

Find out how power brushing can improve *your* product deburring, cleaning and finishing! Call the **OBA** or write *The Osborn Manufacturing Company, Dept. G-4, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

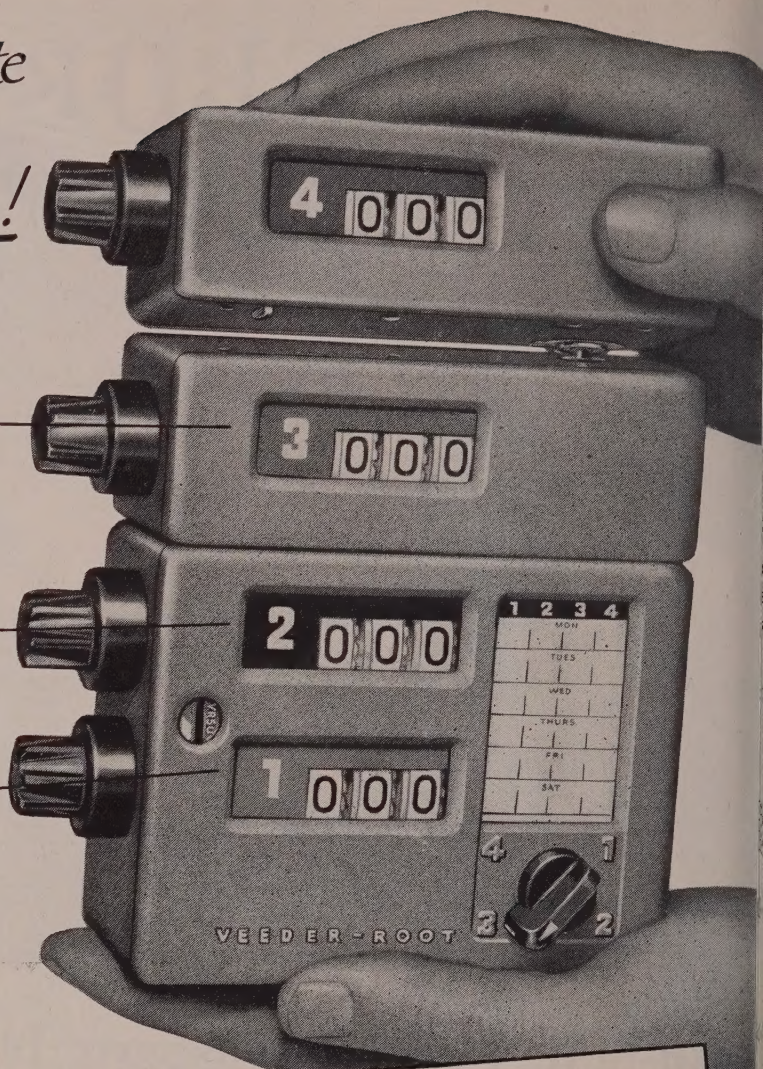
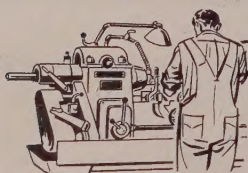
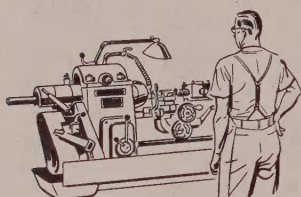
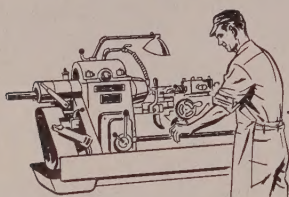


Brushes A and B deburr side corners.
Brushes rotate at 3450 rpm.

Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

*It keeps a Separate
Count of each
shift's production!*



Added Evidence
that

Everyone Can Count on VEEDER-ROOT

Here's a counter whose "count-ability" challenges your imagination. For this counter records, on a separate counting unit, the production of 1, 2, 3, or more shifts. The additional 4th unit can be used as a run or batch counter. These Veeder-Root 2-3-4 Convertible Shift Counters are applicable to a wide variety of production machines, to count in practically any unit desired . . .

revs, strokes, pieces, or what do you want to count? Write:

VEEDER-ROOT INCORPORATED
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HARTFORD 2, CONNECTICUT

New York 19, N. Y. • Chicago 6, Ill. • Greenville, S. C.
Montreal 2, Canada • Dundee, Scotland
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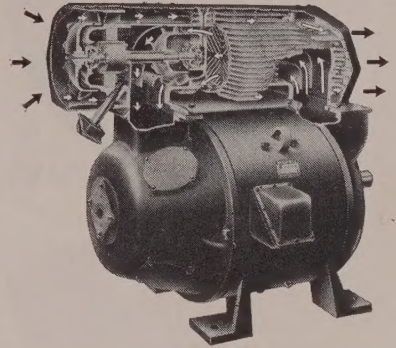
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Effective cooling for adjustable speeds



Cutaway of Dual-Cooled Type 'T' Heavy Duty D-c. Motor showing counterflow of internal and external cooling air through heat exchanger.

RELIANCE Totally-Enclosed Dual-Cooled D-C. MOTORS

The new Reliance Dual-Cooled Motor runs cool at all speeds. It is especially adaptable to Reliance Adjustable-Speed V*S Drives. Two separate cooling systems function independently of motor speed. The internal system uses high-velocity air to carry motor heat to the finned inner duct of the heat exchanger. The external system dissipates this heat by sweeping air through the fins of the outer duct.

Reliance Dual-Cooled Motors are available in totally-enclosed ratings from 15 through 150 horsepower, and explosion-proof, conforming to Underwriters and Bureau of Mines specifications, through 100 hp.

C-118

GET THESE FACTS NOW!

This fact-filled booklet features a large cutaway drawing with 3-color transparent overlay showing cooling principle. For your copy, call the nearest Reliance Sales Office or write for Bulletin C-2201.



RELIANCE ELECTRIC AND ENGINEERING CO.

1081 Ivanhoe Road • Cleveland 10, Ohio
Sales Representatives in Principal Cities

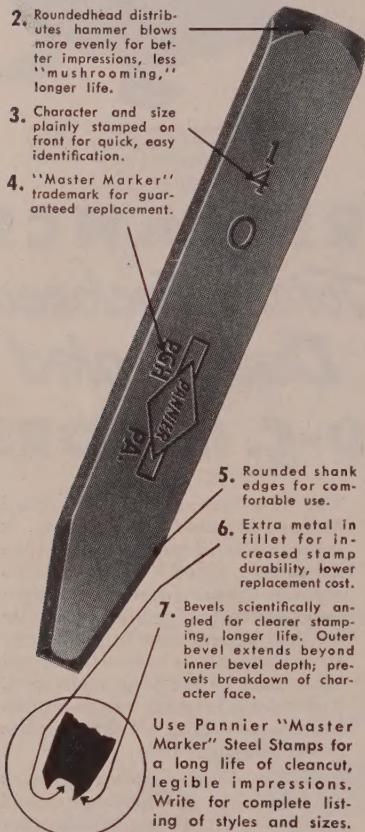
PANNIER Steel Stamps

LAST LONGER...

MARK BETTER

7 REASONS WHY:

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2. Rounded head distributes hammer blows more evenly for better impressions, less "mushrooming," longer life.
3. Character and size plainly stamped on front for quick, easy identification.
4. "Master Marker" trademark for guaranteed replacement.



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220 PANNIER BLDG.

Pittsburgh 12, Pa.



Behind the Scenes...

Mr. Cook, Thank You!

It's been a long time since we referred to our orange crate desk but W. M. Cook of Square D Company remembers it, and by golly it's just as good as new, which is saying absolutely nothing. But that's getting off the track of Mr. Cook's nice letter which we really did appreciate. He writes:

I have read STEEL with pleasure and profit over quite a number of years but will be retiring at the end of this month and will no longer need to keep informed along the lines so ably presented in your magazine, especially on page 6. As my future schedule includes some wood-working, perhaps some spare parts for your orange crate would be in order. Please advise.

Tell you what we really could use, and that's a little drawer of some kind to hold our green-eye shade. Almost every night Geraldine, the cleaning woman, hides it some different place and every morning we have to get down to work a half hour early in order to find it.

Meet Vance Bell . . .

Got past the barricaded door last week long enough to interrupt Vance Bell, assistant managing editor, elbow-deep in the *Guide for Stainless Steel Buyers* he's been compiling for the past ten months.

You can see pride of authorship light up Vance's eyes when he talks about "his project".

"It's never been done before," he says, "and it should be one of the most helpful services we've ever provided our readers."

Sounds like it, too. Just imagine . . . all stainless steel sizes . . . who produces them . . . where they can be purchased . . . all in one compact, easy-to-use reference guide.

"Tentative publishing date," says Vance, "is May 18."

Chatting with Vance Bell is a refreshing experience. He's the kind of guy you're glad is on your side . . .

gives you the feeling that you're a winning team.

You know his work. He writes *Market Outlook* in STEEL each week and that, incidentally, is the "most quoted" business paper column in the United States today. Vance also the author of the *Guide for Steel Buyers* published in STEEL in 1951, the *Metalworking Facts and Figures* sections which appear in STEEL Yearbook issues each year and, of course, you've read and used his annual *Financial Analysis of the Steel Industry*.

If you catch him in a reminiscence mood, Vance will tell you that after attending Ohio State University, he broke into the newspaper and magazine publishing field as a two-dollar-a-week cub reporter on the Delaware (Ohio) Gazette twenty years ago. His boss was a young, whip-cracking, cigar-chewing city editor named Walt Campbell . . . the same whip-cracking, cigar-chewing Walt Campbell who is STEEL's Managing Editor today.

To relax, Vance dabbles in oils. He likes to putter, too. Mrs. Bell, daughter JoAnn and son Charles like his lamp-building efforts best.

Just Call Me Bill

Part of our regular reading diet is *Printers' Ink*, the weekly advertising magazine, which has been published for years and years. In perusing it the other day we noticed a Horace Greeley on the masthead as one of their hardworking editors and our curiosity got the best of us. We just had to write Mr. G. and ask if he were or weren't related to the Horace Greeley, who handed out such excellent advice. Well, believe it or not he is. *The New York Tribune's* editor was his great, great grandfather cousin and young Horace claims his own father had a sense of humor tagging him with the famous name but that the joke is now getting little stale. As a matter of fact, defiance of the old boy's advice, I came east and insists he has no vice for young men. To make even worse he now goes by his middle name of Bill.

Shradu

Half-soles for a Behemoth...



SHARON* HI-STRENGTH STEELS DELIVER MAXIMUM STRENGTH FOR TANK TRACKS

Tank parts must absorb a lot of punishment. Rough terrain, twisting directional turns, cannon recoil, quick starts and stops are a few of the reasons why modern tanks must take it.

To overcome failure through metal fatigue designers today are specifying that most parts of this vital mechanism be constructed of hi-strength steels. As a leader in the

production of such special alloys Sharon has had a large part in the production of hi-strength steels for military purposes.

These same Sharon hi-strength steels are becoming increasingly available for product improvement for civilian consumption. If you're in the market for tough steels that will do more, talk to the Sharon man in your area.

***Specialists in STAINLESS, ALLOY, COLD ROLLED and COATED Strip Steels.**

SHARON STEEL CORPORATION

Sharon, Pennsylvania

DISTRICT SALES OFFICES: CHICAGO, ILL., CINCINNATI, O., CLEVELAND, O., DAYTON, O., DETROIT, MICH., INDIANAPOLIS, IND., MILWAUKEE, WIS., NEW YORK, N. Y., PHILADELPHIA, PENNA., ROCHESTER, N. Y., LOS ANGELES, CALIF., SAN FRANCISCO, CALIF., MONTREAL, QUE., TORONTO, ONT.

For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

SHARONSTEEL

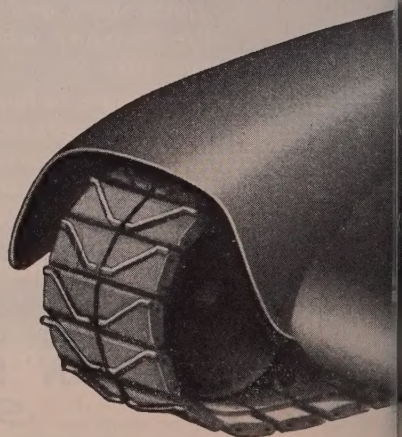
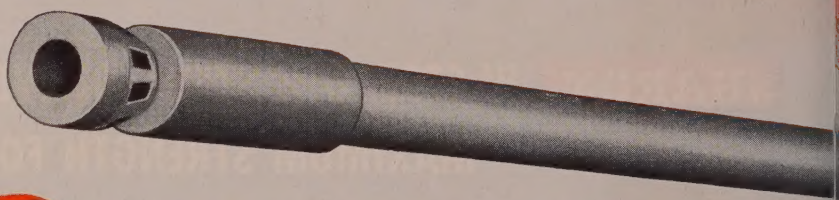


This skeleton tank was produced in 1918. It was built with the view of securing a light vehicle capable of crossing wide trenches. Many structural members were piece of iron pipe with plumbing connections. The skeleton tank was powered with two 4-cylinder water cooled engines having combined horsepower of 100. The unit weighed 8 tons and had a maximum speed of 10 mph. The driver sat in the front and in the rear was a gunner manning a 0.30 caliber machine gun.

FROM THE SHAPE OF THINGS PAST

ARMOR PLATE — *for Ordnance*

Every production facility for armor plate, ready to assemble in gauges from $\frac{1}{4}$ " to 4" inclusive



Standard Steel Spring Company

ARMOR PLATE DIVISION • PENOBSCOT BLDG. • DETROIT, MICHIGAN

Standard Steel Spring Company

ALWAYS A GUIDING FORCE IN TANK PRODUCTION

Throughout the entire evolution of tank development Standard Steel Spring Company has lent a guiding hand in the design and production of a multitude of armored components. Today, our broad engineering and manufacturing experience is working at its highest skill producing a heavy tonnage of flat, formed, fully machined armor plate for tank fabricators. We tool these parts for their most economical production and

work in the closest cooperation with procurement, production and inspection.

If you have a need for armor plate or are interested in a redesign program for greater efficiency and economy turn to us. You'll find that Standard Steel Spring Company—America's largest producer—is your best source for specially designed armor plate to meet your specialized individual needs.

TO THAT OF THOSE TO COME



Artist's conception of a long, low and streamlined tank of the future. The spherical contours of the armor plate minimize the effects of enemy fire power.



FLEXIBLE CONTROLS

made with

KEYSTONE GALVANIZED MB SPRING WIRE

- Uniform Tensile
- Corrosion resistant
- Extra strength

Leading makers of flexible control cables specify Keystone Galvanized MB Spring Wire for uniform coiling, improved corrosion resistance and extra strength. The outstanding quality of this wire is governed by Keystone's unique method of *galvanizing the wire before it is cold-drawn*. The drawing process smooths and hardens the galvanized finish — improves its lasting qualities. Keystone Galvanized MB Spring Wire is also furnished in Type 2 and Type 3 heavy weight zinc coatings before drawing to meet specified salt spray tests.

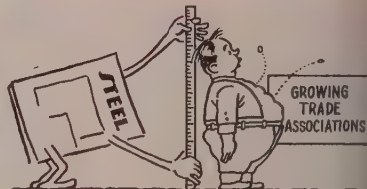
INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS



LETTERS TO THE EDITORS

Grow with Your Association



I plan to give your excellent trade association article "Trade Associations—How To Grow with Them" (Mar. 9, p. 76) wide distribution in our membership. Can we obtain the 450 reprints necessary to do the job?

J. C. Sear,
executive secretary
American Gear Mfrs. Association
Pittsburgh

We would like to get 500 reprints . . .
Kenneth Anderson
Scientific Apparatus Makers Association
Chicago

Please send us 200 reprints . . .
H. S. Langman
president
National Association
Architectural Metal Mfrs.
Minneapolis

Send 1500 . . .
Revel W. Elton
American Trade Association Executive
Washington

Send 50 . . .
Steel Shipping Container Institute
600 Fifth Avenue
New York

Send 4000 . . .
M. Ballinger
National Screw Machine Products Association
Cleveland

Send 2000 . . .
E. C. Barringer
executive vice president
Institute of Scrap Iron & Steel
Washington

• Reprints of this article are still available from STEEL's Reprint Department—ED.

Pumping for Information

It is our intention to survey the pump industry as to the types of pumps produced, number of manufacturers and sales for the industry. As you know the latest census data are approximately five years old and apparently the only source of information.

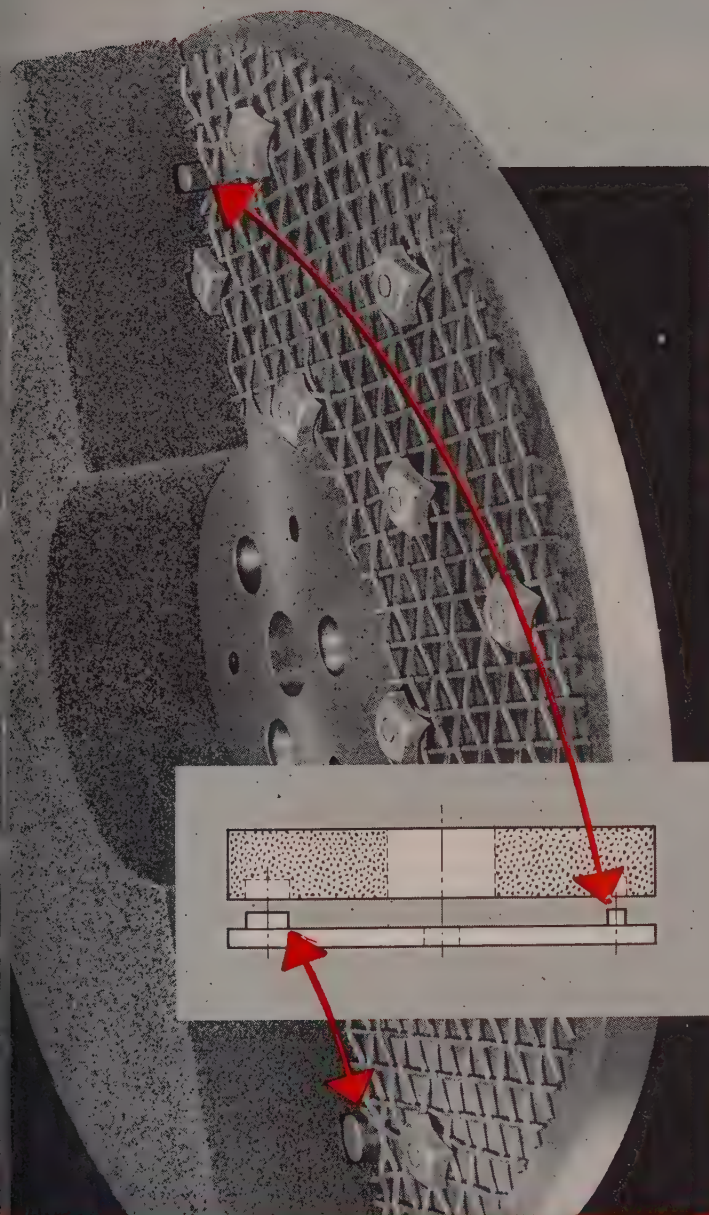
I have used surveys in the past conducted by trade publications and wonder whether your organization has any data on the pump industry, including compressors.

S. D. Chirsan, manager
Market Research Unit
Westinghouse Air Brake Company
Wilmerding, Pa.

• About 350 companies in the U. S. produce pumps, compressors and related equipment. In 1951, sales of all pumps except turbine classification, were at the rate of \$6.8 million a month. That's well above the 1950 monthly average of \$4.5 million. Monthly sales of compressors in 1951 averaged \$5.9 million in the classification which includes stationary compressors of a wide variety, cost

Continued on following page

Compare the Grinding Precision of This Abrasive Disc With Other Makes



Grinding to close tolerances is no problem with Gardner abrasives. Precision work is made easier because factory trueness is maintained throughout the entire life of the disc.

On Gardner discs provided with the Tru-Lok feature, it's impossible to make an off center mounting. On job after job maintaining trueness assures better finishes and closer tolerances. Doweled Tru-Lok mounting aligns the holes in the abrasive and the steel wheel.

This exclusive Gardner feature is another reason why Gardner Abrasive Discs are first choice among users of flat surface grinders. New Gardner grinders are equipped with the Tru-Lok feature. It can also be made available for older machines.

Gardner engineers abrasive discs to fit specific grinding requirements. For help with your surface grinding problems, call the nearest representative in our nation-wide service organization.



GARDNER

*abrasive
discs*

Technical Publicity Division

GARDNER MACHINE COMPANY

Beloit, Wisconsin

107A

Please send me the Gardner Guidebook for Surface Grinding.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

LETTERS

Concluded from preceding page

plete portables and rock drilling equipment. The monthly average for the compressor classification in 1950 was \$2.7 million. Total sales figures are not estimated because of the diversity of the industry's production and because 25 plants in addition to the 350 mentioned above turn out the products as a minor activity.—ED.

Tops in Its Field

I rate STEEL magazine as number one. For my needs, it gives me all the information classified so I can find what I want quickly. When time is too short to turn all the pages, I know that glancing first at the Outlook, then continuing through the editorial, and following 5 or 6 pages of news; then a full turn to the Market Outlook, News and Metalworking Notes; and I'll have everything I NEED. I can't do that with any other metalworking publication.

So, place that feather among the others in your cap.

J. R. Pr...

Hudson Steel Supply Co.
Providence, R.I.

A Job for Everyone

I have read with great interest your editorial in the Feb. 23 issue "P.R. Every Company's Job," together with the comprehensive article on public and community relations in the same issue.

Both the editorial and the article are most constructive and should be a stimulant in furthering a better community and public relations job by industry.

John W. Hill & Knowlton
New York City

Congratulations on your most excellent primer on community and public relations.

V. R. Hasel
3116 2nd Road
Arlington, Va.

Will you please send me five copies...

B. W. Le...
vice president
AP Parts Co.
Toledo, Ohio

Pattern of Street Distribution

Can you recommend a source for figures on the distribution of steel by either trading areas; state or county; broken down into the divisions used by the American Iron & Steel Institute?

E. P. Essley
secretary
E. L. Essley Machinery Co.
Chicago

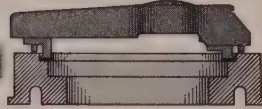
• There are no up-to-date figures on distribution of steel geographically. The 1947 Census of Manufacturers has a section titled "Geographic Distribution of Consumption of Metal Mill Shapes, Forms and Castings: 1947" which may obtain from the Commerce Department or Census Bureau. Ask for report series number MC100-10.—ED.

Here's the Answer for Inspecting SHALLOW DIAMETERS



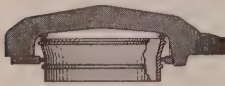
Model 167 Straight Types

either INSIDE

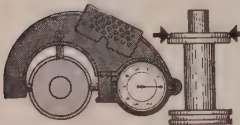


Model 236 Straight Types

or OUTSIDE



Humped Types
Inside or Outside

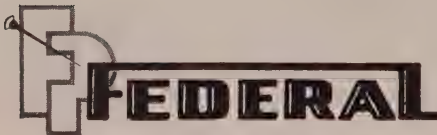


"C" Types
Inside or Outside

Checking the accuracy of a diameter on a shallow shoulder or similar section is often a problem, especially if the diameter is large in comparison with the surface being measured. (See sketches). With these Shallow Diameter Gages, however, it's easy to get fast, accurate checks.

"Locating" contact points help to position the gage parallel to the flat surfaces of the workpiece so the actual diameter is read perpendicular to the axis of the workpiece. Both inside and outside diameters, and diameters at various depths, are checked positively and accurately.

For checking workpieces having projections which would interfere with Straight Type Gages, the Humped Types are recommended. For measuring similar dimensions remotely located from either end of the workpiece "C" Type Gages are the answer. Let us know your requirements. Federal Products Corporation, Providence 1, R. I.



Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES

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Please send me information about the following:

- ☐ Sketch ☐ Blueprint is enclosed showing dimension we wish to gage.
☐ Model 167 ☐ Model 236 ☐ Humped Types ☐ "C" Types
Straight Types Straight Types

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Company.....
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City..... State.....



How to "wrap up" *improved production*

If your production involves the application or forming of wire, consider this . . .

Because specialists at National-Standard's Worcester Wire Works probe *deep* into the development and behavior of special-purpose wires, they're often able to suggest modifications that cost production plenty! Sometimes, for example,

it's a modification that eliminates machine jamming and down-time. It might be a new or different finish that permits increased production speeds. Or, as often happens, it's an idea that gets the job done with *less* wire or other materials.

You can always count on Worcester Wire Works for service that goes further than usual — for special development help if you want it. And, in any case, you'll find in your National-Standard wire the uniformity, the adherence to specifications that in itself saves time and dollars!

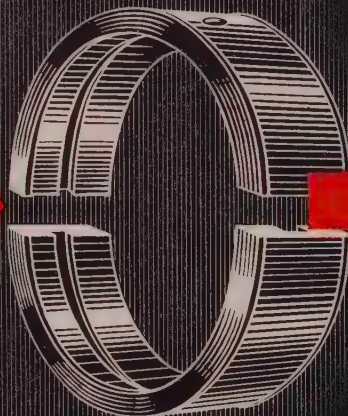
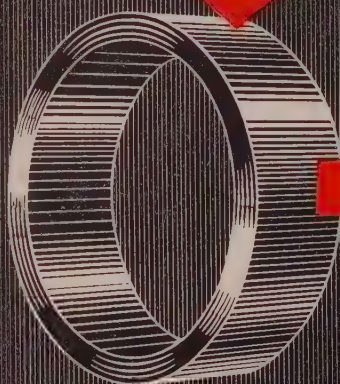
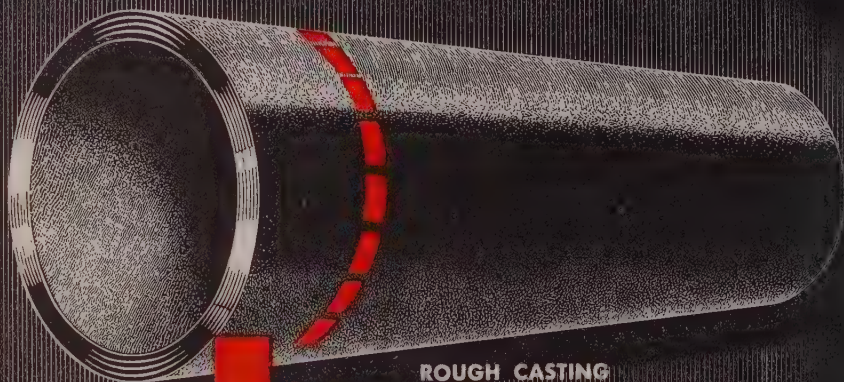


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ROUGH... RIGHT

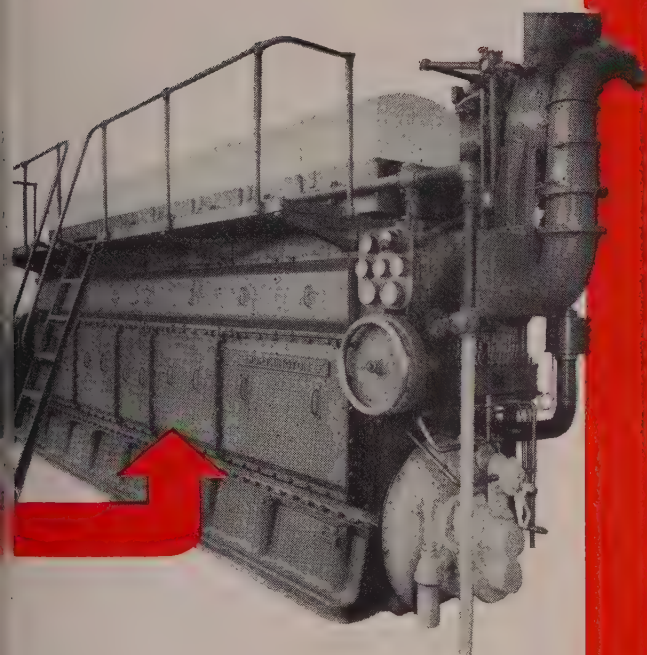
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TYPES OF METAL CAST: Stainless Steel—All AISI Types, plus special heat and corrosion resistant analyses.
• Alloy Steel—all grades • Carbon Steel—all grades • Gray and Alloy Iron—all standard and special analyses, including Ni-Hard and Ni-Resist • "Dual Metal"—Gray or alloy iron inside steel; gray iron inside chilled iron and tool steel; iron or steel inside stainless; and many other metallurgically bonded two-metal centrifugally cast combinations.

SIZE RANGE: Outside diameters— $2\frac{1}{2}$ " through 30" • Wall Thickness— $\frac{1}{4}$ " to 4" • Lengths—Up to 14'.

EADY



WORTHINGTON'S popular Heavy Duty Super-charged 16 x 20 Diesel Engine is equipped with centrifugally cast bearing backs supplied "as cast" for finishing by Worthington to its own specifications.

IN ROUGH FORM... "as cast"... ready for other specialists to fabricate or to finish — that's how we supply castings to a growing list of America's quality-minded industries.

These bearing backs, for example: Worthington Corporation uses them in their entire line of Heavy Duty Super-charged Oil, Gas and Dual Fuel Diesel Engines. We furnish the rough castings in random lengths up to 10 feet. Worthington finishes them—machines, tins and babbitts to their own specifications.

The result is a bearing shell with the following distinct advantages:

- 1** Metal mold centrifugally cast gray iron has high tensile strength and uniform grain structure highly satisfactory for tinning and babbitting the bearing face.
- 2** This soundness provides for uniformity of bond. Minimum babbitt thickness assures efficient operation, maximum bearing life.
- 3** Rough castings are annealed dead soft allowing maximum machining speeds and feeds for iron — keeping machining cost to a minimum.
- 4** The annealed gray iron centrifugally cast bearing back stock properly machined will not spring out of shape when split to make bearing halves.
- 5** In the event of babbitt failure, the cast iron back won't injure the journals of the crankshaft.
- 6** Losses incurred in finishing are held to a minimum.

Like to know whether metal mold centrifugally cast iron, steel and stainless steel is the answer to your particular problem? Write and outline your tubular product requirements today. Our engineers will gladly forward the facts.

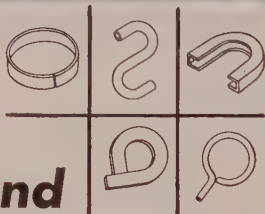
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BURLINGTON, NEW JERSEY

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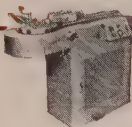


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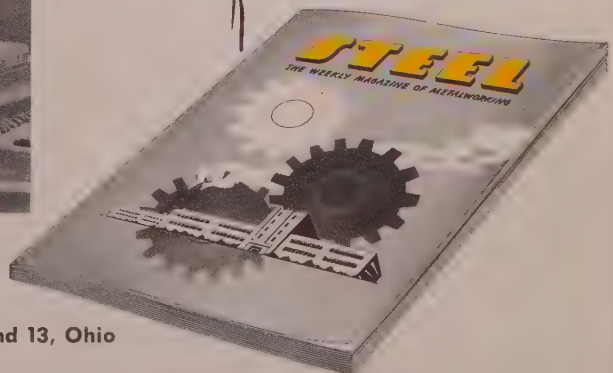


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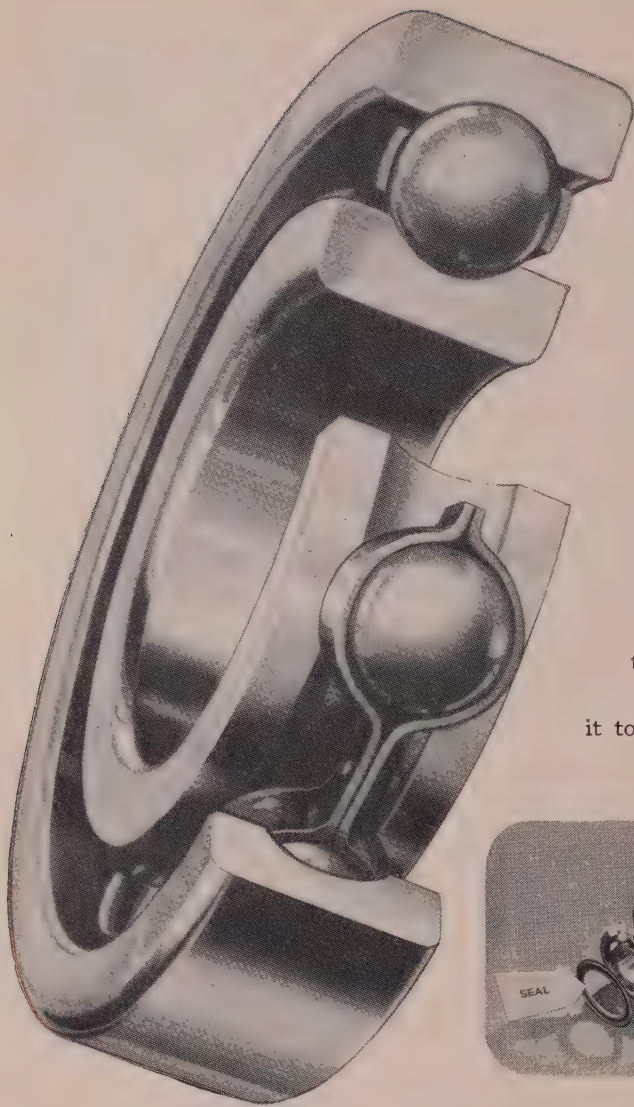


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The magazine of the men who
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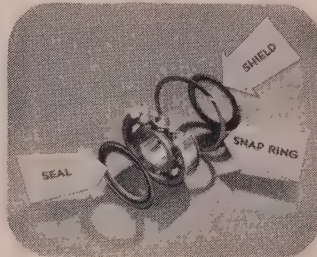


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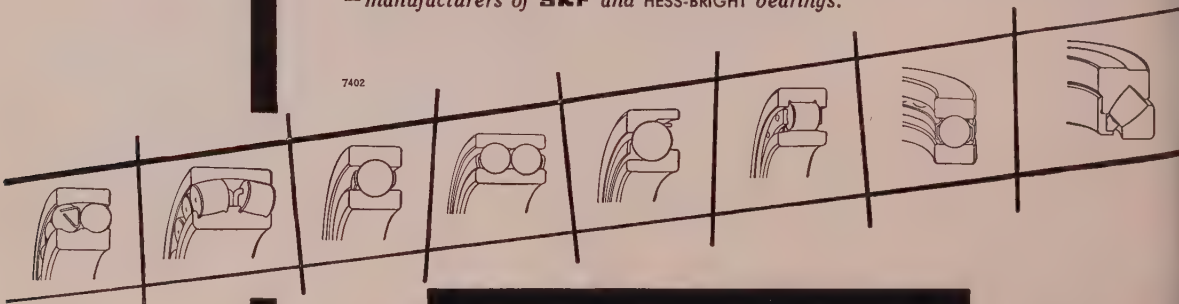


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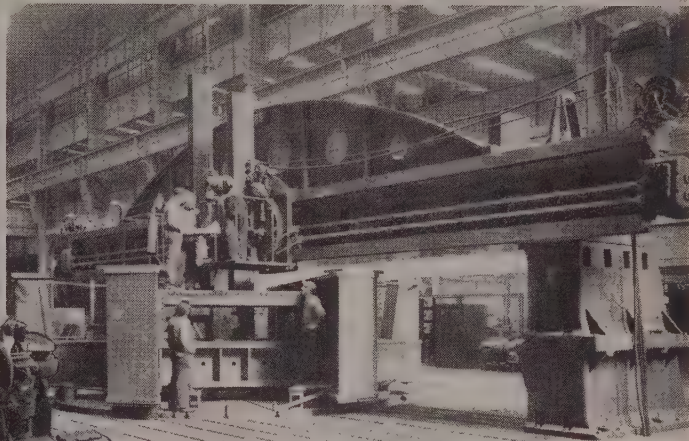
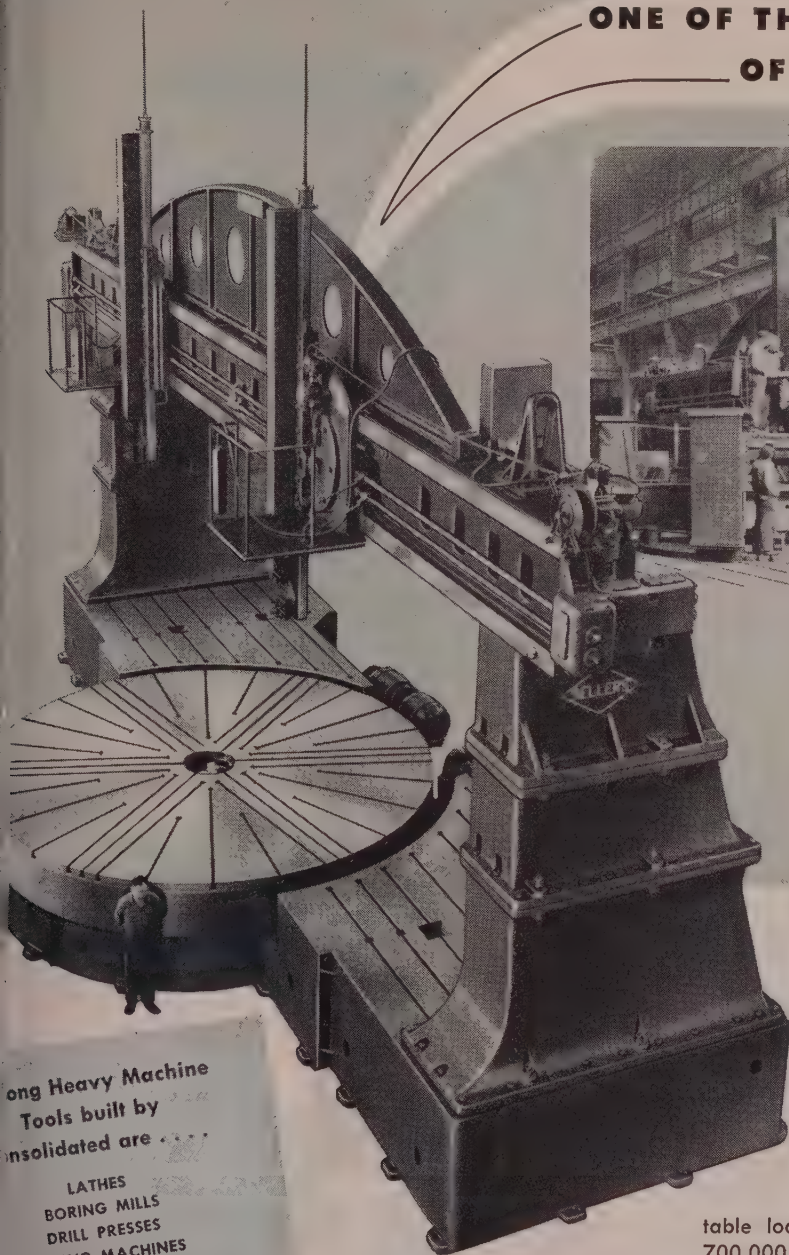
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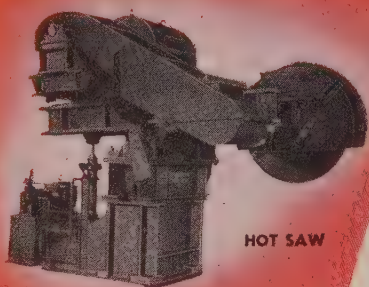
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- PLANERS
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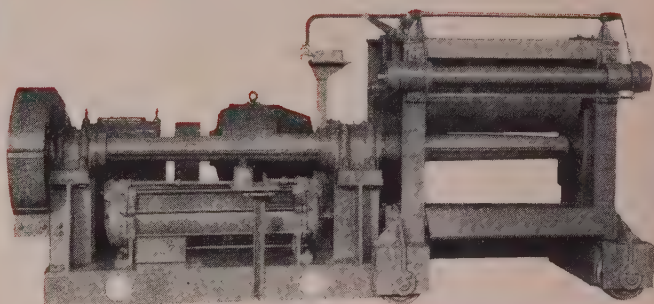


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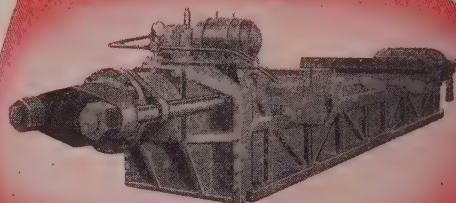
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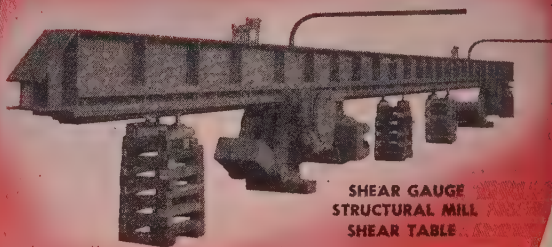
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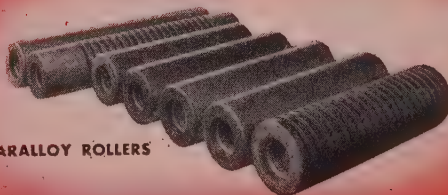
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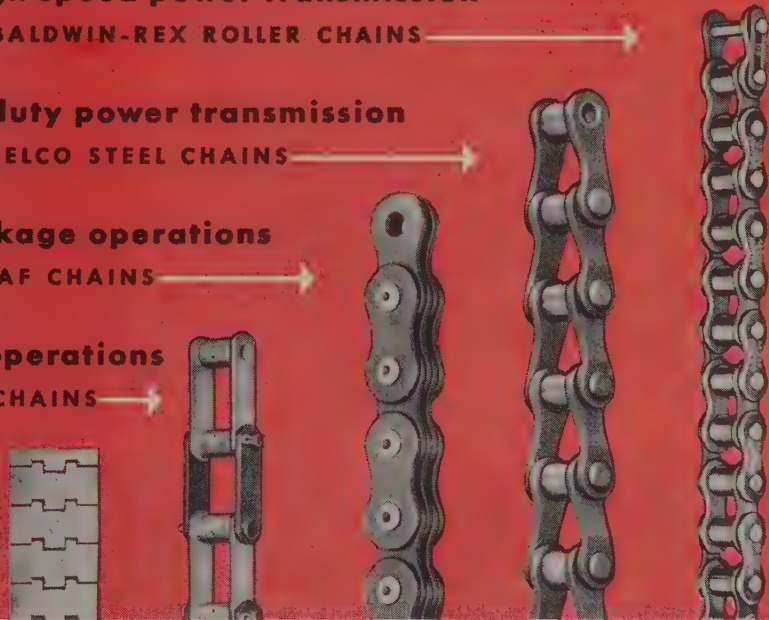
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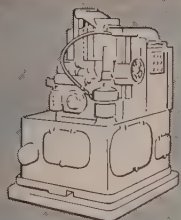
—and there's much more to it
than appears on the surface

Only a stainless steel periscope tube, and some special navigational apparatus, shows above water. But below, a wonderfully compact mass of fighting machinery—literally packed with special steels and electrical alloys. *With* them, the ship is almost human. *Without* them, it has no eyes, ears, power . . . or usefulness. • When you have to combat corrosion, heat, wear or great stress—or require unique electrical properties—check with us. Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.

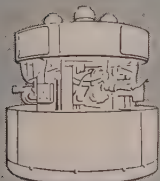
W&D 4146 B



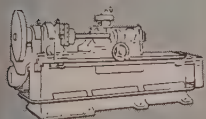
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Allegheny Ludlum



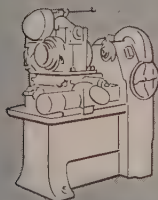
12-S HOBBER



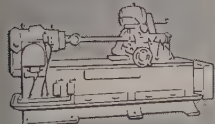
7-A ROTARY HOBBERS



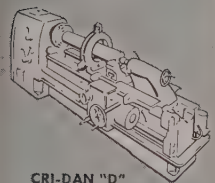
SH SPLINE HOBBER



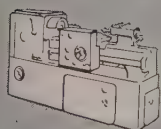
MODEL 40 THREAD MILLER



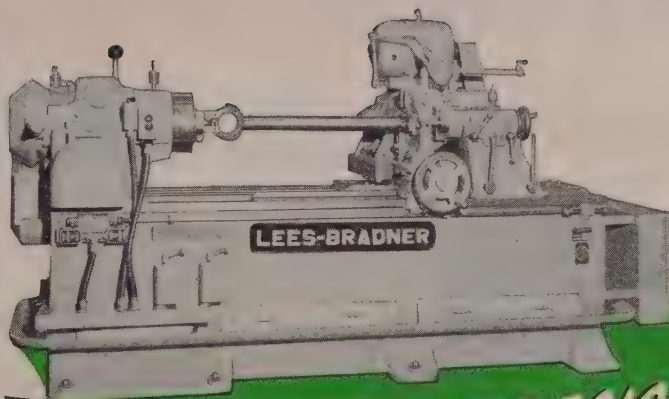
HT THREAD MILLER



CRI-DAN "D"



CRI-DAN "B"



RUGGED PRECISION
of the Lees-Bradner Model HT Thread Miller
HELPS PRODUCE
RUGGED POWER
for Caterpillar



It's not surprising that Caterpillar should select the Lees-Bradner HT Thread Miller to help produce the famous line of Caterpillar earthmoving equipment. They have a lot in common.

Both are extra rugged and unusually versatile. Both are built for long, efficient service and both are leaders in their respective fields.

No matter what the threading job, chances are the Lees-Bradner HT Thread Miller can meet your requirements—for accuracy, speed and the wide range of work it can accommodate.

Call your Lees-Bradner representative for the whole story on the HT Thread Miller—or write us direct.

the **LEES-BRADNER**

CLEVELAND 11, OHIO, U.S.A.

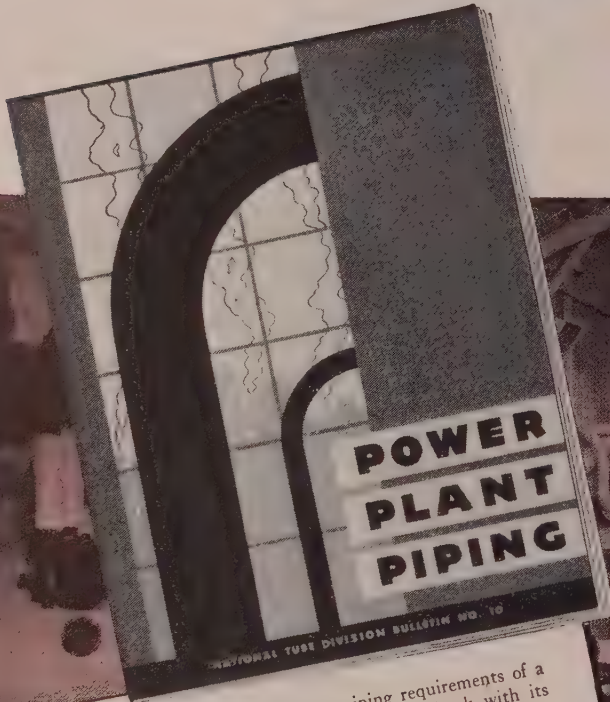
Company

Here's why **NATIONAL** Seamless handle today's higher

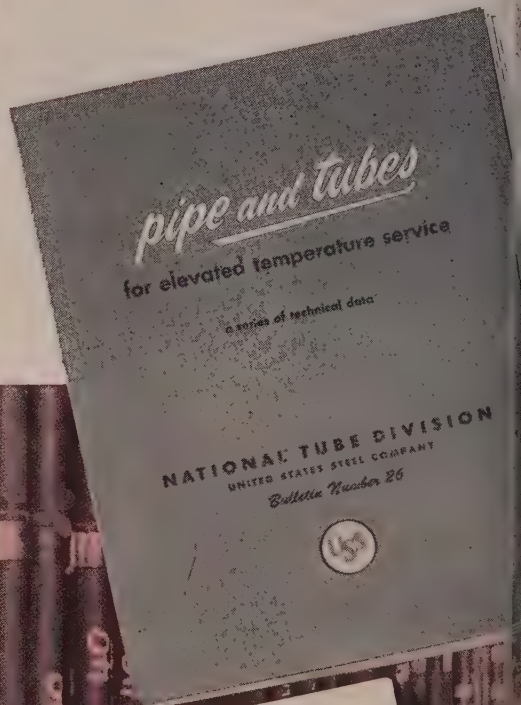
THE equipment you use today must meet demands far more severe than those of only a few years ago. That's because stepped up operations, in industrial processing of all kinds and in the more efficient production of steam and power are continually calling for higher temperatures and pressures.

In the face of these increasingly more difficult conditions it is comforting to know that insofar as pipe and tubes are concerned *all* your needs can be met economically and efficiently by NATIONAL Seamless Pipe and Tubes.

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IF YOU'RE CONCERNED with the piping requirements of a modern, high-pressure, steam station, this book with its practical data and information will greatly help you in the piping design and assure better results from its application. Just ask for a copy of Bulletin 10—Power Plant Piping.



IN THIS RECENTLY PUBLISHED BULLETIN 26, you will find a complete and authoritative guide to the selection of the right analysis of pipe and tubing for handling elevated temperatures. The technical data covers 26 different steel analyses representing a wide variety of chemical compositions that are of special interest to users of tubular products who are concerned primarily with elevated temperature properties. Send for your copy.

PIPE and TUBES will help you temperatures and pressures

What is more, NATIONAL Seamless Pipe and Tubes, old in name and rich in service, have never been allowed to rest on past performance. Through the years they have continually been improved ... not merely to meet industry's more and more drastic demands but always to anticipate them.

That is why, no matter how severe or unusual your pipe or tube problem—whether it involves extremes of heat or pressure, corrosion, oxidation, exposure, or any combination of destructive conditions—more than likely one of our many analyses of NATIONAL Seamless will provide a solution, reasonable in cost and dependable in service.

NATIONAL TUBE DIVISION

UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.

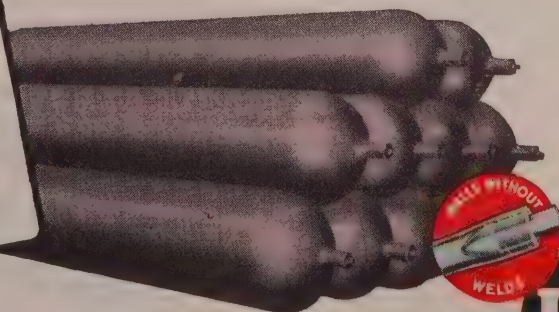
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

UNITED STATES STEEL EXPORT COMPANY, NEW YORK



NATIONAL SEAMLESS CONDENSER AND HEAT EXCHANGER TUBES are recognized everywhere as the finest tubes that modern metallurgy can produce. They are furnished in a number of analyses to meet the different requirements of modern heat transfer applications. We invite you to bring your problems to NATIONAL. Our tubing specialists will work closely with your own engineers to see that you get just the right tubes for your particular requirements.

FOR SAFE, EFFICIENT, AND ECONOMICAL high pressure gas storage, you can't beat NATIONAL Seamless Steel Bottles. Manufactured from seamless steel pipe made by the famous "Walls without Welds" process and formed at both ends, necked and tapped to your specifications, these steel bottles offer the utmost in strength, safety and low maintenance. An inquiry will bring detailed information. Ask for Bulletin No. 25.



U·S·S NATIONAL *Seamless* PIPE AND TUBING

UNITED STATES STEEL



... untouched by human hands!

... to plus-or-minus .035 oz.!

... at 12 per minute rate!

pistons balanced automatically



For the first time, this MORRIS Mor-Speed Production Machine makes piston balancing 100% automatic. Parts are unloaded automatically from a standard conveyor, processed or rejected and returned to the conveyor "untouched by human hands."

Underweight or grossly overweight pistons are automatically rejected without interrupting the production flow. Depending on a cycle time ranging from 5 to 8 seconds per part, production is 450 to 720 parts per hour varying with the amount of metal to be removed from each piece at 80% efficiency and to a plus-or-minus one gram accuracy limit!

MORRIS Automatic Piston Balancing Machines are used by a number of the major automotive producers. If you have a piston production line, let Morris Engineers show you case history proof of time, labor, money and floor space savings.

Write today for NEW bulletin describing and illustrating the revolutionary MORRIS Piston Balancing Machine.

The Morris Automatic Piston Balancing Machine takes only 27.3 square feet of floor space to turn out up to 12 accurately balanced pistons every minute!

a better
product
at less cost
with precision
PLUS production

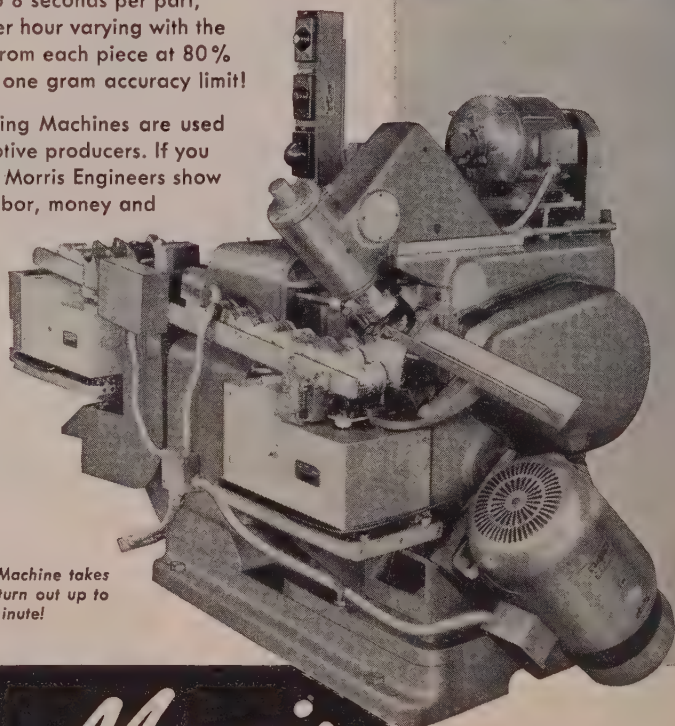


Morris

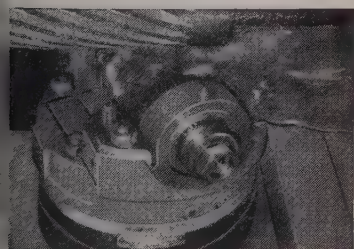
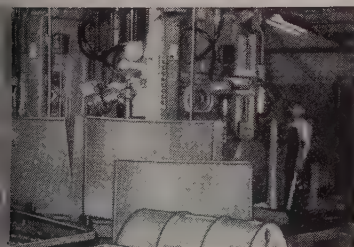
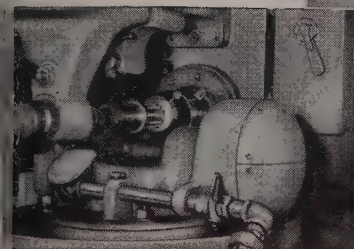
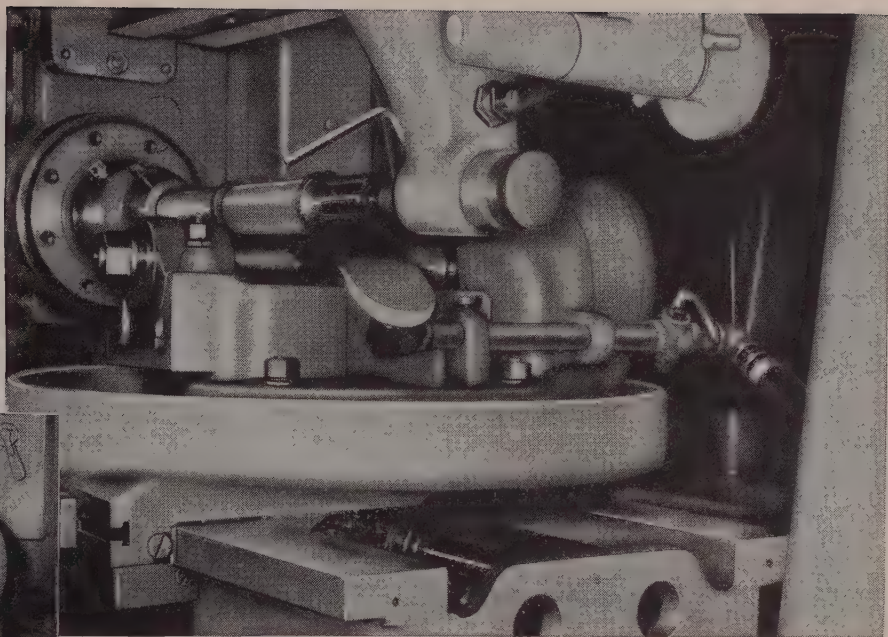


... by this amazing new

Morris
**AUTOMATIC
PISTON BALANCING
MACHINE**



THE MORRIS MACHINE TOOL COMPANY, 941 HARRIET ST., CINCINNATI 3, OHIO



"ON-THE-JOB" CUTTING OIL TESTS BY CITIES SERVICE ENGINEERS!

at Timken-Detroit Axle Company

TOOL WEAR REDUCED 25%...MANUFACTURING COSTS ALSO CUT!

In an effort to reduce tool wear and cut manufacturing costs, the Wisconsin Division of Timken-Detroit Axle Company at Oshkosh called in Cities Service Engineers to make "on-the-job" tests.

Cities Service Lubrication Engineers made an on-the-spot study of the Timken-Detroit operation. This "on-the-job" evaluation by skilled Cities Service Engineers, long practiced in solving like problems, resulted in a recommendation for the use of a Chillo Cutting Oil that actually reduced tool wear 25% with proportionate savings in manufacturing costs!

WHAT ARE YOUR PROBLEMS? Why not take advantage of free, "on-the-job" testing? Call for our lubrication engineers at the office nearest you, or write Cities Service Oil Company, Dept. C18X, Sixty Wall Tower, New York City 5, New York.



QUALITY PETROLEUM PRODUCTS



Eagle Music Wire

—for Dependable Springs—

has been famous for its
UNIFORM QUALITY and
PRECISION STANDARDS
for more than fifty years

WASHBURN WIRE COMPANY, NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS—STRIP—RECTANGULAR, ROUND, FLAT ROUNDS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRE

A. P. GREEN KX-99

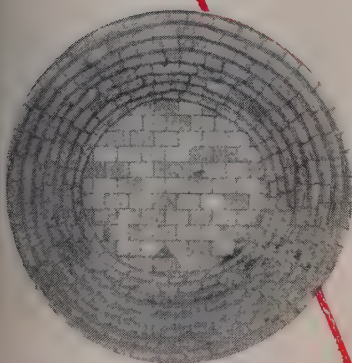


KX-99

firebrick linings in hot metal cars and hot metal mixers provide extra tonnage that means extra savings

The superior toughness and uniformity of KX-99 in hot metal car and hot metal mixer linings has provided such outstanding service records, many leading steel companies have standardized on their use.

The exceptional properties of KX-99 brick enable them to better withstand erosion and slag action. Uniformity of size permits laying up KX-99 with very thin joints to better withstand the scouring and washing action of molten metal.



KX-99 LINING IN HOT METAL CAR.

A. P. Green
**REFRACTORY
PRODUCTS**



For detailed information on service and specific recommendations—contact your local A. P. Green Representative or write

**A. P. GREEN FIRE BRICK COMPANY
MEXICO, MISSOURI**

In Canada:

**A. P. GREEN FIRE BRICK COMPANY, LTD.
TORONTO 15, ONTARIO**

** Check List for*

PRACTICAL LATHE TURNING

either tool room or high production

* BIG ACCURATE LEAD SCREW

INDEPENDENT FEED SHAFT

BIG PRECISION TIMKEN BEARING SPINDLE

HEAVY TAIL STOCK, ANTI-FRICTION THRUST BEARINGS

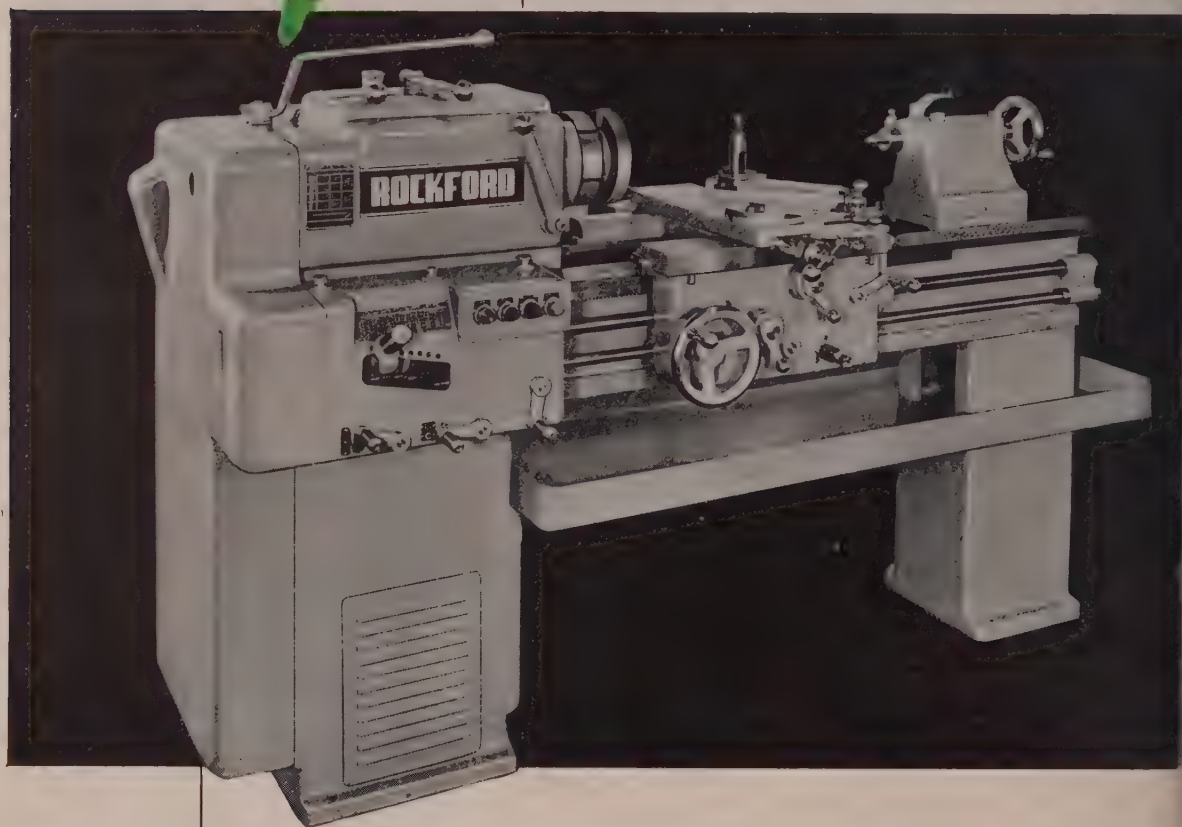
PRECISION HOBBED AND SHAVED HEADSTOCK GEARS

TOOL ROOM ACCURACY, ZERO PRECISION BEARINGS,
PRODUCTION POWER, 5 H.P. DRIVE MOTOR

ALL GEARED HEAD, QUAD-V-BELT DRIVE

HEAVY CUTS, 16" OR 18" SWING, 30" CENTER DISTANCE

6' BED, DOUBLE-WALL APRON, 3100 LBS. TOTAL WEIGHT



Rockford Lathes offer you all of these production features, with modern design, ample dimensions and high quality materials.

Ask a Rockford Machine Tool Co. Representative to give you full details on the practical production advantages of these heavy service, medium sized, economy priced machines.

**MEDIUM-SIZED
ECONOMY-PRICED**

ROCKFORD ECONOMY LATHES—16" and 18"

ROCKFORD MACHINE TOOL CO.

2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

Job-engineered instrumentation by Honeywell assures performance ... saves time



APPLICATION ENGINEERING

Starts with cooperative discussion between customer and Honeywell engineering representatives ... follows through to design and assembly of complete control systems.



THERE'S more to instrumentation than instruments. Any control system, to do its job right, has to be designed for the methods, equipment, materials and of the process with which it works.

Here is where Honeywell Application Engineering steps in. First, a Honeywell engineering representative discusses process details with your engineers, production men and instrument technicians. Then he refers the problem to staff application engineers ... each of whom is trained in the methods and control techniques for a specific industry.

These men work out details of what instrument to use for each measurement or control function ... what type of primary element ... what control system ... what size and style of valve. Then they combine all these components into a complete system that is arranged for greatest production efficiency, convenience, and ease of service.

The new result to you is two-fold. First, this service saves you many valuable man-hours by supplementing the work of your own engineering staff. Second, you're assured of a control system that will give you

the best in performance, not only of the Honeywell instruments, but also of the process which they serve.

Application engineering is one of the most important plus values you get from Honeywell instrumentation. Ask your local representative to discuss how it can go to work in your plant modernization or expansion ... he's as near as your phone.

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REGULATOR Co., *Industrial Division*, 4462 Wayne Avenue,
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MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS

First in Controls

STANDARDS and SPECIALS by the Millions

THE FERRY CAP & SET SCREW CO. 2159 SCRANTON ROAD • • • CLEVELAND 13, OHIO



"SHINYHEADS"

America's Best Looking Cap Screw
Made of high carbon steel — AISI C-1038—to standards for Full Finished hexagon head cap screws—bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.



"LO-CARBS"

Made of AISI C-1018 steel—bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size—not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.



FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots—less burrs. Flat and chamfered machined point. Carried in stock.



"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.



CONNECTING ROD BOLTS

Made of alloy steel—heat treated—threads rolled or cut—finished to extremely close thread and body tolerances—body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.



FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert—steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.



"HI-CARBS"

Heat Treated Black Satin Finish
Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.



SET SCREWS

Square head and headless—cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.



FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots—less burrs. Flat and chamfered machined point. Carried in stock.



ADJUSTING SCREWS

Valve tappet adjusting screws—Hexagon head style—to blue print specifications—hexagon head hard; polished if specified—threads soft to close tolerance—points machine turned; flat and chamfered.



SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.



STANDARDS

carried by
LEADING
DISTRIBUTORS

* SPECIALS

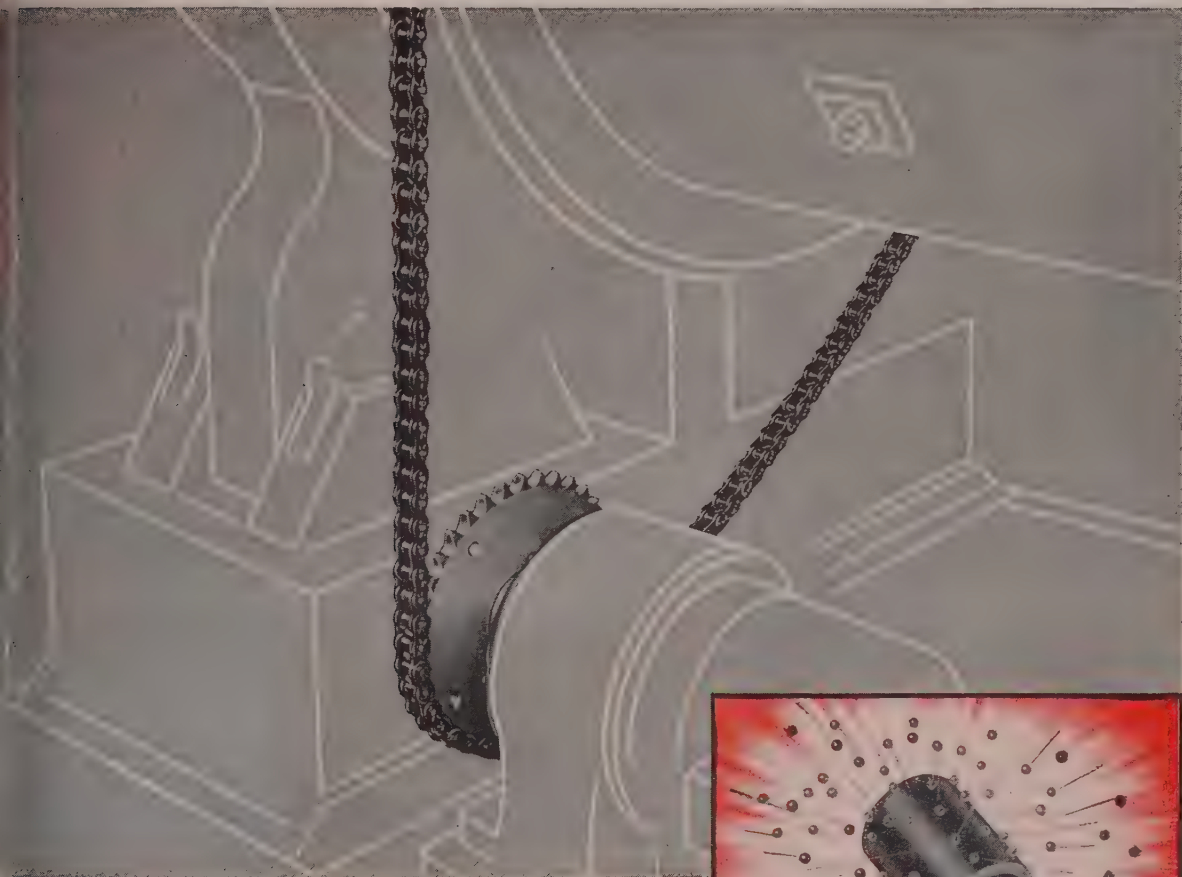
furnished to
BLUE PRINT
SPECIFICATIONS

**WRITE FOR
INFORMATION**

SEND FOR SAMPLES

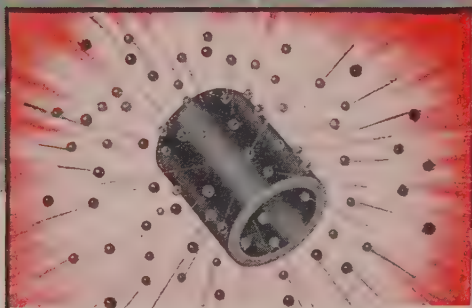
Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907

There's **EXTRA LIFE** built into LINK-BELT roller chain



Shot-peened rollers are just one of many engineering extras you get from LINK-BELT

WHETHER it's for drive or conveyor service, every Link-Belt Roller Chain gives you a performance bonus. In addition to shot-peened rollers, lock-type bushings multiply capacity to withstand shock loading. And closer heat-treat control, rigid testing and thorough inspection pay off in greater uniformity . . . extra years of life. Link-Belt Precision Steel Roller Chain is built in single or multiple widths, $\frac{3}{8}$ " through 3" pitch. Double pitch 1" through 3". A call to your nearby Link-Belt office will bring you prompt, expert service. Send for Engineering Data Book No. 2457.



Look for the distinguishing darkened rollers. Thousands of tiny steel balls hammer the metal—"cold work" each roller . . . pay off in extra fatigue life . . . added ability to withstand shock and impact of today's heavier loads.

13,119-A

LINK-BELT

ROLLER CHAIN & SPROCKETS

NK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.



Re-check YOUR Cost Relief Zone!

Hundreds of Other Men Responsible for Tooling and Production Have Acted on This and Profited!

Here is a step you can take now to get relief from high production costs: *Re-check your tools and dies!* How much production time are you losing because of too frequent shutdown for die regrinding? How much *extra* money are you spending on costly die finishing, adjusting? Are your tools and dies breaking or wearing out too fast? A tool and die re-check will often give you the answers.

Take the job shown above. Knurling mills like this impress patterns on large .35% carbon steel rolls for embossing cloth and plastic. Some of the patterns are fragile and the sections as deep as 1/16" must not collapse. The mills must be hard enough to prevent upsetting, tough enough to prevent edges from breaking under pressures up to 5 tons. A re-check of the job showed that better performance could be expected if a more dependable die steel were used. Carpenter

No. 11 Special (Water-Hard) met all of these requirements and provided the necessary cost relief.

If you're looking for immediate ways to bring costs down to a respectable level, act on this now. Use the Carpenter Matched Set Method to select the one steel best suited to cut costs. This Method is backed by a *dependable* tool and die steels that *stay* on the job. Then, for rush delivery, call your nearest Carpenter Mill-Branch Warehouse or Distributor. THE CARPENTER STEEL COMPANY, 139 W. BERN ST., READING, PA.

Are You Missing These Opportunities In Your Cost Relief Zone?

- Less die finishing and adjusting
- Greater output between grinds
- Fewer heat treating failures
- Less machine downtime

On Job After Job Carpenter Matched Tool and Die Steels Have Made Them Possible!



Carpenter

Matched Tool and Die Steels

Export Department: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEEL"

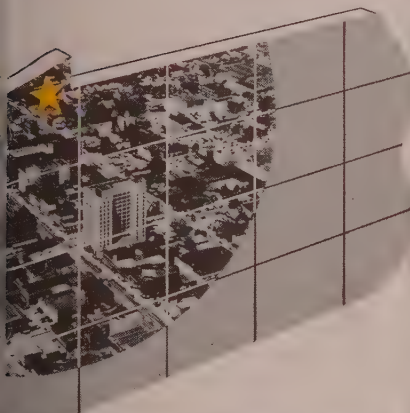
Mill-Branch Warehouses and Distributors in Principal Cities Throughout the U. S. A. and Canada

LOOK HOW YOUR MARKET

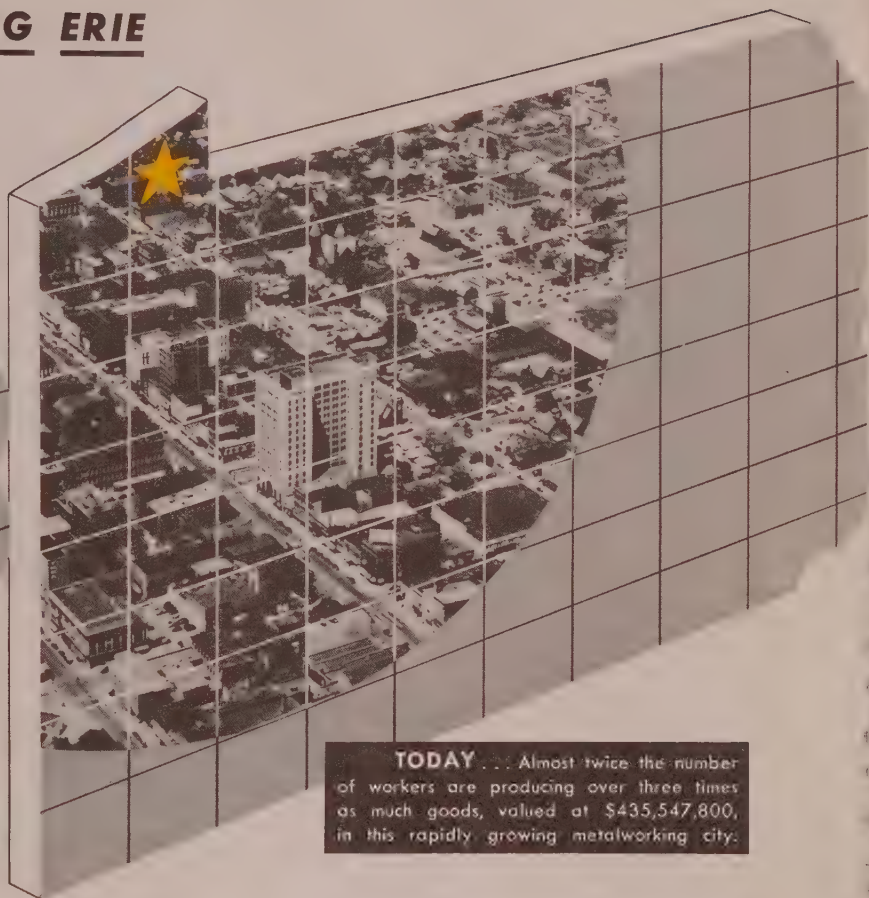
IN METALWORKING ERIE

HAS DOUBLED

SINCE 1940!



IN 1940 . . . Erie, Pa., was proud of 20,000 men in metalworking plants turning \$115,892,700 worth of goods.

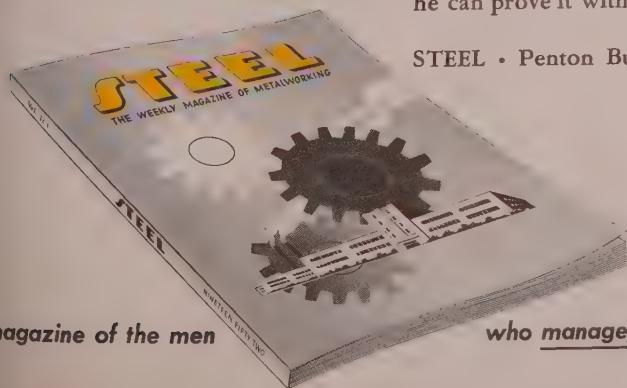


TODAY . . . Almost twice the number of workers are producing over three times as much goods, valued at \$435,547,800, in this rapidly growing metalworking city.

**What are you doing
to stake out your
claim in fast-growing
Metalworking America?**

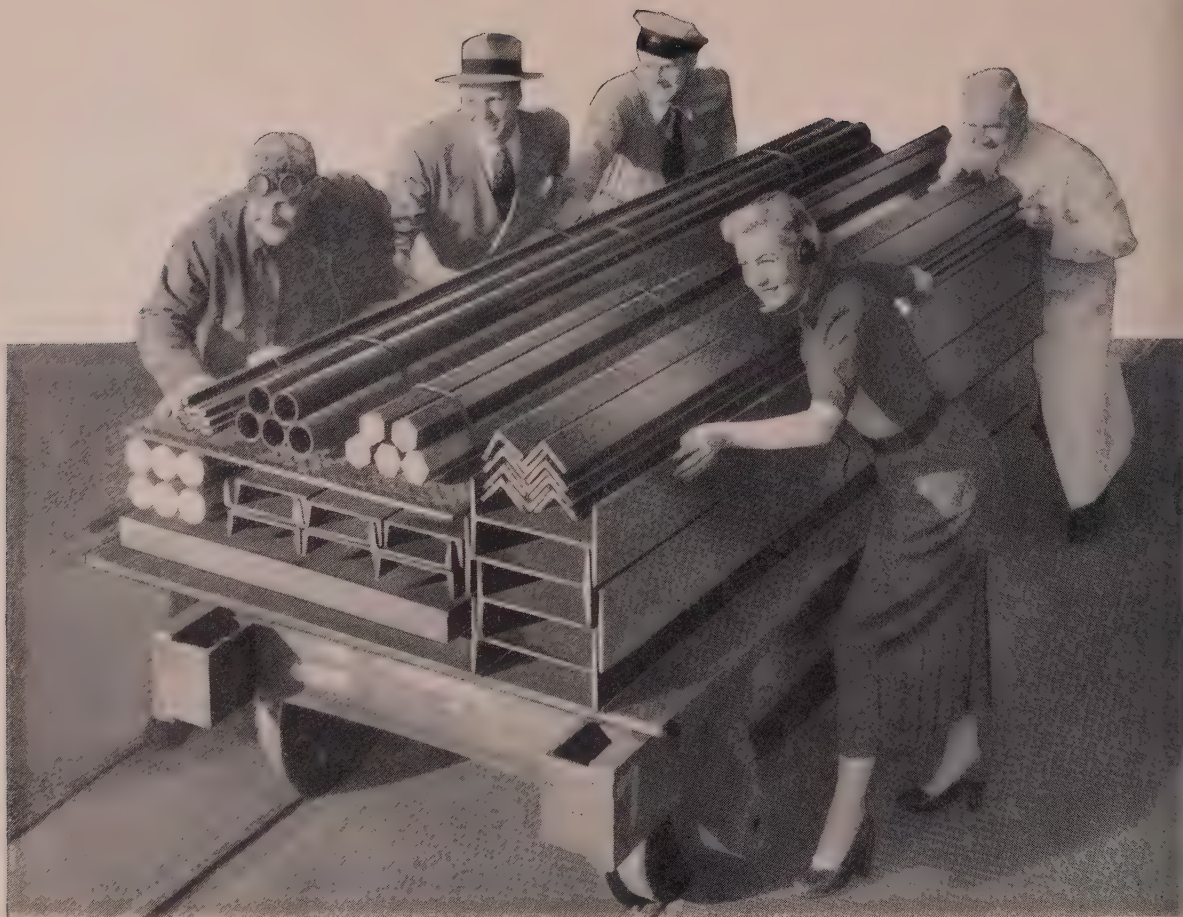
Pick practically *any* city in addition to Erie, and you'll find the same tremendous growth in your metalworking market. This twice-size growth in plants, workers and output has created a sales potential unequalled in the history of America. This is *your* market, but it isn't waiting for anybody. In its hustling urge to turn out "guns and butter" and grow even bigger, it is buying more goods than any other market in the world. The suppliers who aggressively stake out their claims in this market *now* . . . will have an "in" during the continued expansion ahead. STEEL can help you stake out your claim in Metalworking America faster and more efficiently. That's because STEEL already reaches more of the key men who run metalworking than any other industrial publication. And its continuing census of new plants under construction will *keep* it out front in the coverage you want. Ask the man from STEEL . . . he can prove it with facts and figures.

STEEL • Penton Building • Cleveland 13, Ohio



the magazine of the men

who manage, operate and buy for the Metalworking industry



Steel-Service Team

In there -- Pushing

Now more than ever the help of an experienced steel-service organization is especially valuable. That's why it may well pay to get in touch with the nearest Ryerson office or plant.

Not that we can *always* furnish the steel you need—much as we would like to, and hard as we try. But, with controls relaxing a little and a few steel products coming into better supply, there are more opportunities for experience and ingenuity to take over. And experience, ingenuity—and the will to help are never in short supply at Ryerson.

Your nearby Ryerson plant is staffed with specialists on carbon, alloy and stainless steels who are always ready to work with you. Often they

can suggest practical alternates when the steel you need is not available. And back of the Ryerson plant nearest you stand the resources of fourteen other Ryerson plants, making up the nation's largest steel-service organization. So when a kind or size is not on hand locally, we may be able to ship it from another plant.

With all Ryerson plants cooperating, and with Ryerson specialists helping to make the most of available steel, we are usually able to maintain service in spite of the current situation. So we suggest that you check with us regularly for all your steel requirements . . . There is nothing too difficult when it comes to working with a Ryerson customer.

Principal Products: Carbon, Alloy & Stainless Steels — Bars, Structurals, Plates, Sheets, Tubing, Machinery & Tools, Etc.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

bidding . . . Prefabricated housing will have importance in the total construction scene this year. Prefabricated Home Manufacturers' Institute says production in 1953 will exceed the 1952 record by 10 per cent.

Pay for Foremen

What are you paying foremen? National Foremen's Institute says that 38 per cent of them in manufacturing get \$450-\$500 a month; 14.3 per cent get \$400-\$450 a month; 10.1 per cent get \$500-\$525. A small number get more than \$700 a month.

Ductile Iron Output To Double

Production of ductile iron will reach 200,000 tons in 1953, double the 1952 output, says Albert G. Zima of International Nickel Co. Inc. Production during 1949 was 3500 tons. Developed by International Nickel in that year, the process is now being used under license by 200 foundries, of which 100 are in the U.S.

C. F. & I. Buys Australian Iron

Colorado Fuel & Iron Corp.'s Claymont, Del., plant has purchased 60,000 tons of Australian basic pig iron at prices said to be fully competitive with the domestic market. The first 20,000 tons are scheduled for delivery within the next four to five months. C.F.&I. also considered getting its iron by rail across the country from its Pueblo, Colo., furnaces, but for the time being, at least, the import answer is more feasible.

Straws in the Wind

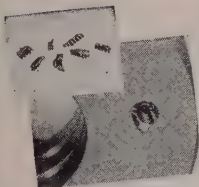
Thirty-five aluminum radiators for autos, deliberately placed where conditions are most severe, have been operating satisfactorily for more than a year . . . The first car is expected to roll off the assembly lines at Ford Motor Co. of Canada's new Oakville, Ont., plant by mid-May . . . Despite record corporate sales of about \$500 billion in 1952, corporate profits dropped from \$18 billion, the 1951 figure, to \$17.1 billion for last year . . . Here's what income taxes do: Business borrowing rose by \$279 million in the week ended Mar. 18, the largest increase since the week ended Sept. 17, 1952, also a period around quarterly tax paying time.

What Industry Is Doing

Businessmen plan to spend a record \$27 billion in 1953 on new plant and equipment (p. 45) . . . Los Angeles stakes a claim as the metalworking capital of the West as it becomes the permanent home of the Western Metal Exposition & Congress (p. 46) . . . Stampers' business is running 20 per cent ahead of last year's, despite fewer war jobs (p. 47) . . . New materials and methods are developed to combat losses due to corrosion (p. 48) . . . The Defense Materials System takes shape (p. 49) . . . Iron ore carriers are ready for a record season if demand so requires (p. 50) . . . Needle bearings are growing rapidly in industrial usage (p. 52) . . . Businessmen must do their part in the business of government (pp. 53-60) . . . Suggestion plans are saving time, material and expense for the 6000 companies adopting the idea-producing systems (p. 61).

METAL DISINTEGRATION

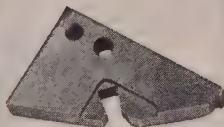
and what it can do for you . . .



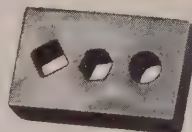
Remove Broken Taps
fast without distortion



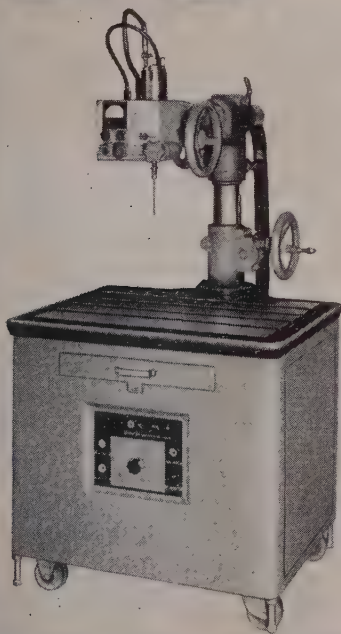
Cut oil holes in hard-
ened gears without
annealing



Cut dovetails in hard-
ened dies



Cut any shape hole
in cemented carbides



Literally hundreds of thou-
sands of dollars are saved
annually by corporations that
are using Metalmasters in just
tool and die repair alone.

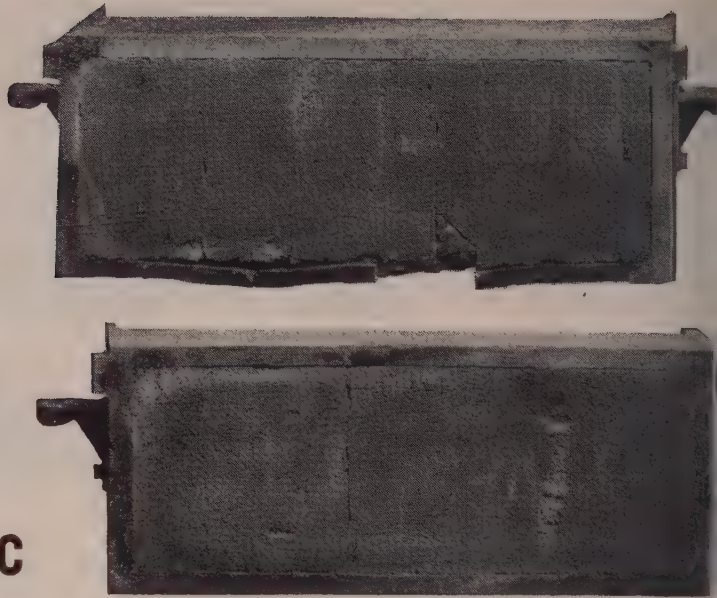
There's a technical engineer
in your area to give you an
on-the-spot demonstration in
your own plant at your con-
venience. (NOTE: It is not
uncommon to pay for a Metal-
master with just one short
demonstration thru savings on
workpieces.)

For information as to the Metalmasters' uses and bene-
fits merely write today on your company letterhead to:

Metalmaster

DIVISION OF CLINTON MACHINE COMPANY
CLINTON, MICHIGAN

Ductile Iron Furnace Doors now used by General Electric



Last 50 times longer...

The Ductile Iron Door (lower photograph) is still good, as you can see, after the months of use on a steel forging furnace that operated with interior temperatures as high as 1950°F. After one week in the same service, the gray cast iron door (upper photograph) is, obviously, ready for the junk heap.

At General Electric Company's River Works, West Lynn, Massachusetts, steel forging furnaces operate with interior temperatures as high as 1950°F.

Heretofore, gray cast iron door frames of these furnaces deteriorated from growth, warpage and scaling in about six days . . . and cost plenty in terms of down-time, replacement, and week-end overtime for repairs and maintenance.

Seeking a remedy, General Electric tried Ductile

Iron door frames, cast by TAYLOR & FENN COMPANY, Windsor, Connecticut. And the result? Average life of these Ductile Iron doors is now estimated at about 300 days. Even though only seventeen furnaces reap this benefit, savings therefrom are estimated at \$25,000 per year.

Ductile Iron provides oxidation and growth resistance to an extent heretofore unavailable in gray iron castings for furnaces, engines and other equipment subject to elevated temperatures.

High temperature applications of Ductile Iron castings include forging furnace door frames, entering grate bars, pouring troughs, lifting plates for coil annealing machines, lifter bars in rolling mills, and scores of other parts subject to heat.

AVAILABILITY—Send us details of your prospective uses, so that we may suggest a source of supply from some 100 authorized foundries producing Ductile Iron under patent licenses. Request a list of available publications on Ductile Iron . . . mail the coupon now.

The International Nickel Company, Inc.
Dept. 20, 67 Wall Street, New York 5, N. Y.

Please send me a list of publications on: DUCTILE IRON.

Name _____

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State _____

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.



March 30, 1953

Most Potent Force

It can be assumed that most students of industry-government relations will agree that the ideal situation would be one in which industrial executives and federal government officials have a sympathetic understanding of each other's problems, a respect for each other's motives and a real pride in each other's contributions to the national welfare.

In our really young and immature republic we have never approached within gunshot of this ideal. From the earliest pioneering days we have maintained a stubborn independence that more often than not has been manifested in a sort of "against the government" attitude. We proclaim our loyalty to flag and country but at the same time we insist upon our right to criticize the people we elect to run our government.

The cordiality of relations between industry and government depends more upon personalities and circumstances than upon political party affiliations. Industrialists who were in the dog house when Teddy Roosevelt was President got along all right with Woodrow Wilson's administration. Unfortunately, the non-partisan aspect of industry-government relations was badly distorted if not destroyed by the Franklin D. Roosevelt and Harry S. Truman regimes, when a host of pampered pets were given carte blanche to smear and discount industry at every opportunity.

Today the situation has changed. Industry is not in the dog house as far as the new administration is concerned, but it must be remembered that in the vast precincts of bureaucracy in Washington there remain thousands of persons who still think their primary mission in life is to damn industry.

Obviously, the response to this challenge is a straight forward exposition of the real economic, political and social contributions of American industry. Production provides the wherewithal for every reform, improvement, social security or other advantage for which "do gooders" take credit. When the relations between industrial leaders and government officials become sufficiently co-operative to establish this fact as a basic foundation for improving the welfare of the nation, we will begin to make real progress. Industry's job is to demonstrate that its competitive free enterprise system is the most potent force for social progress in the world today.

EDITOR-IN-CHIEF

CAPITAL OUTLAYS RISE: Many persons have felt that expenditures for new plant and equipment in 1950, 1951 and 1952 were so heavy that a decline in 1953 was almost inevit-

able. Apparently they are wrong. The Department of Commerce and the Securities & Exchange Commission (p. 45) have conducted a survey which indicates that capital outlays this

year will total around \$27 billion. This compares with \$26.5 billion in 1952, \$25.6 billion in 1951 and \$20.6 billion in 1950.

However, the pattern of plant and equipment expenditures will differ sharply from that of recent years. The railroads and primary iron, steel and nonferrous producers will reduce their capital expenditures considerably. Public utilities and some machinery manufacturers will increase their investments substantially.

* * *

HAILS L. A. IN METALS: Ever since the middle of March, reports of salesmen covering metalworking plants in the East and Middle West have contained numerous notations such as this: "Unable to see Mr. Jones. He is enroute to California for the Metal Show." The extent of this heavy exodus was revealed last week when it was apparent that attendance at the Western Metal Exposition & Congress (p. 46, pp. 86-90) was approaching 30,000.

About 350 companies and their distributors set up 253 exhibits in Los Angeles' Pan-Pacific Auditorium and in tents which were hastily erected to accommodate the overflow. Seven national societies, participating in the Congress, provided an impressive array of technical papers, symposiums and panel discussions in the new L. A. Hotel Statler. It was significant and appropriate that some of the newer metals—particularly titanium, zirconium and new non-ferrous alloys vied with the old standard metals for the attention of metallurgists, designers and operating men. An unprecedented total of 21 papers were presented on zirconium alone.

Visitors were impressed with the rapidly growing stature of Southern California as a metalworking center. In fact, this growth is largely responsible for the decision by the sponsoring American Society for Metals that henceforth Los Angeles will be the permanent home of the western show and congress.

* * *

AMAZING CONSERVATION:

Remember, shortly after the Japanese attacked at Pearl Harbor, the lengths to which industry and government went to conserve precious tin? How well that cooperative program worked is indicated by a statement made by officials of the American Can Co. According to them (p. 46), 46,900 tons of tin were required in the pro-

duction of tin mill supplies for containers in 1941, while in 1952 only 27,772 tons of tin were required, even though 18 billion more cans were produced. It is estimated that about 257,000 tons of tin were saved in the production of cans since 1941 through tinplate conservation programs.

This is a wonderful achievement. It speaks volumes for what industry and government can do in time of emergency when aided by ingenuity, research and effective teamwork.

* * *

POINT OF LOWER YIELD: Reports from soft coal producing areas indicate that the contract signed last year by the United Mine Workers and the coal operators is not working as well as John L. Lewis anticipated. In fact, fears expressed by employers during negotiations are being realized. They argued that increasing the royalty for the welfare fund from 30 to 40 cents per ton would collide head-on with the law of diminishing return.

Exactly that is happening. Last year's contract gave added impetus to the market trend of recent years—that of pricing coal out of its natural market. Today some good mines are working only three days a week. Lower production has caused the Lewis "welfare fund" to receive fewer dollars at 40 cents a ton than it netted when the "take" was only 30 cents a ton. Non-union operators, of which there are more than is generally realized, are in an advantageous position.

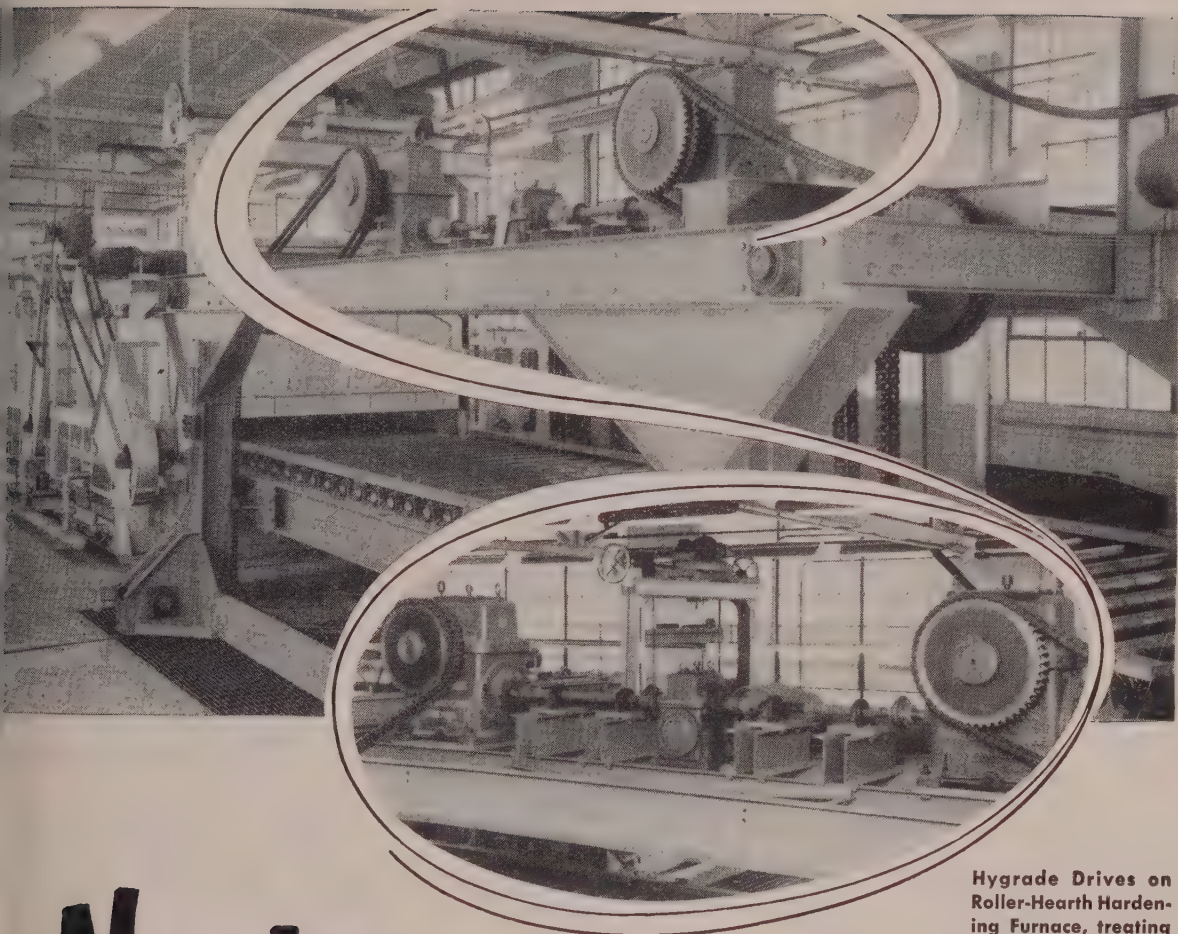
It is not wise to dismiss the old law of diminishing return with impunity.

* * *

ORE FLEET IS ON JOB: A sure sign of spring is the opening of navigation on the Great Lakes. This year the first ore carriers to go north for their cargoes were scheduled to leave lower lake ports last Friday. This is earlier than the average opening date.

Fortunately the 1953 ore fleet will be capable of meeting almost any conceivable demand that may be placed upon it. Its 292 vessels (p. 49) will have a trip capacity of 3,018,000 gross tons. Also, many of the newer carriers can make more trips per season.

Veteran lake shippers predict the fleet will bring down from 95 to 100 million gross tons in 1953. The record is 92 million tons in 1942. If hard pressed the fleet could carry 105 million tons or more.



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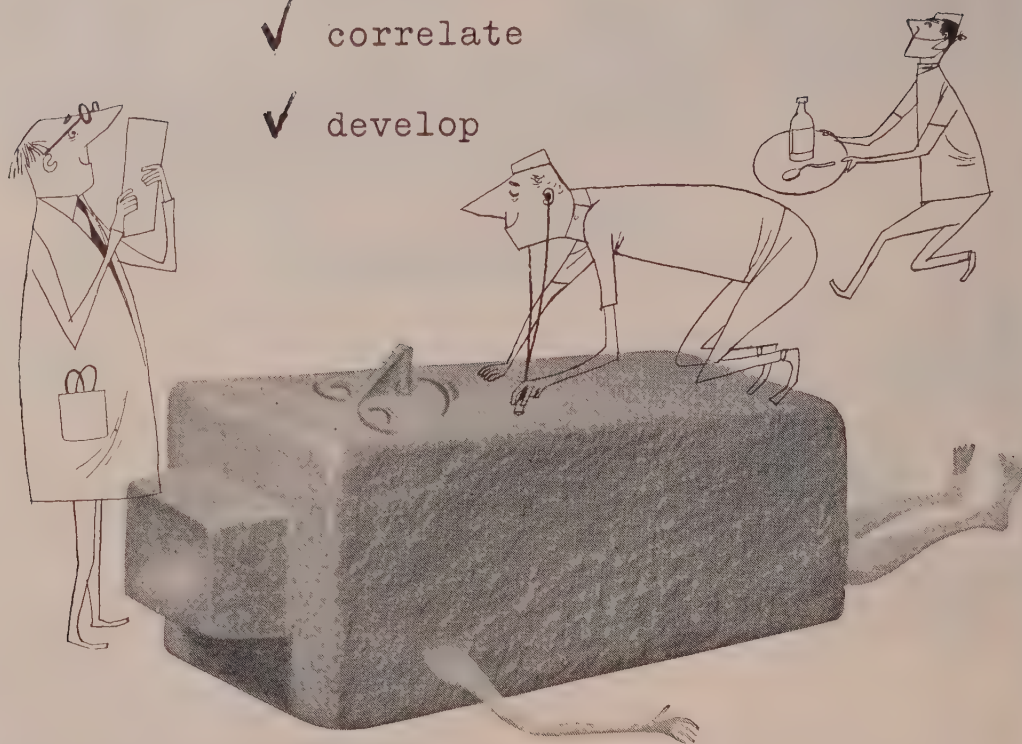
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Probing into the structure of ingots is typical of the Inland research that pays off in improved steels for you, such as sheets of better drawing quality and fewer surface defects.

These hard-to-please research metallurgists have also come up with such Inland products as faster machining LEDLOY steels, one-coat TI-NAMEL enameling iron sheets, stronger bonding HI-BOND reinforcing bars and many others.

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Steel

NEW PLANT AND EQUIPMENT EXPENDITURES

(Millions of dollars)

	1952	1953	Percent Change
ALL INDUSTRIES	26,455	26,991	2
Manufacturing	11,994	12,039	0
Durable-goods industries	5,784	5,523	-5
Nondurable-goods industries	6,210	6,516	5
Mining	880	910	3
Railroads	1,391	1,294	-7
Transportation, other than rail	1,363	1,380	1
Public utilities	3,838	4,368	14
Commercial and other	6,989	7,000	0

Source: Securities and Exchange Commission and Department of Commerce

Low Peak for Capital Outlays?

Business optimism continues high as industry predicts a record \$27 billion expenditure in 1953 for new plant and equipment. Prospects for depreciation reform improve

AMERICAN businessmen plan to spend a record \$27 billion in 1953 on new plant and equipment. They'll spend even more if the Republicans in the Treasury liberalize the depreciation rules.

The table above shows that expectations about capital outlays, as reported to the Commerce department and the Securities & Exchange Commission, are the most optimistic in the public utility field, the most pessimistic in the railroad and durable goods industries.

Where It Will Come—Most of the decline in durable goods spending will come in primary iron and steel, nonferrous metals and nonautomotive transportation equipment. Machinery firms plan substantial increases in investment, while most other major durable goods makers expect little change in outlays from 1952 rates.

Plant and equipment expenditures will be higher in the first half of the year than in the second. Businessmen have scheduled outlays at seasonally adjusted annual rates of \$27.5

billion in the first quarter and \$28.1 billion in the second quarter of 1953. Even with a drop in the second half, 1953 will comfortably surpass the \$26.5 billion expended in 1952, the \$25.6 billion in 1951 and the \$20.6 billion in 1950.

Time for Action — This year's heavy capital spending will be still higher, most observers believe, if the Treasury department moves quickly to change the antiquated rules on depreciation for tax purposes. In 1934 the government put out a seemingly innocuous Bulletin F, a schedule of useful lives for a vast list of physical assets. The bulletin was changed a little in 1942. That edition, modified occasionally in the past decade, has become the depreciation bible for industry. It sets up the average useful life for physical assets at 20.74 years.

From 1934 on, Treasury's Bureau of Internal Revenue required industry to follow Bulletin F schedules unless it could prove that historically it has followed its own. BIR originally thought most of industry

would have the factual data to prove its figures. Few companies did. The result: Bulletin F is the near-universal gospel, and on the average, the depreciation tax credit on your physical assets can amount to only 5 per cent annually for 20 years of original value.

In Agreement—Specialists on the subject, even some in government, now agree that federal depreciation policies have meant: Inadequate account is taken of inflation; industry is forced to use antiquated equipment; and BIR is as much as five years behind in its tax audits, partly because of all the red tape involved in depreciation rules.

Five-year amortization has helped the situation somewhat, but only temporarily. The peak in defense expansion is past, and authorizations for the fast tax writeoff have been dropping steadily since mid-1952. So the clamor for permanent reform is growing louder. And the Republicans are listening.

Knotty Problem—The real question now is how to relieve the situation, not to convince Treasury officials that reform is needed. Here are some of the major remedies that Treasury men are studying: Allow the taxpayer to adopt any schedule of useful life that he pleases; permit a big first-year allowance of 20 or 25 per cent of original value; make five-year amortization a permanent policy



Radio-Active Tracers for Pneumatic Tubes

Sixty-cents worth of radio-active cobalt is currently keeping the 8000 feet of pneumatic tubing in Carborundum Co.'s internal communication system open for business. Absorbent paper discs, 1 inch in diameter, are placed in a solution of soluble cobalt and water and hermetically sealed between two pieces of plastic in the mailing carriers. One man, armed with a Geiger counter, can then quickly locate any stoppage in the tubes. The amount of cobalt used makes the mail carriers no more dangerous than the average luminous wristwatch dial

for all industry; allow a complete writeoff in two-thirds the estimated useful life of industrial plant and equipment.

The last suggestion, championed by Machinery & Allied Products Institute, probably has the best chance of acceptance. In the long run, the scheme would mean no loss in tax revenues to the government, perhaps even gains, but it would mean a drop in tax income in early years of the changeover—a decrease of maybe \$1 billion the first year.

Even at that, the loss would be still greater if any of the other ideas were implemented. The decline in taxes in the early years that would unavoidably result from any changeover is awkward at a time when the Eisenhower administration is trying to make good on its campaign pledge to balance the budget.

So, depreciation reform will take political courage. But many tax experts say it will have beneficial results politically, too. It will help assure prosperity—and votes—by stimulating businessmen to continue to spend heavily for new plant and equipment.

New Goal for Blast Furnaces

An additional 2 million net tons of annual capacity have been added to the original expansion goal of 85 million net tons for blast furnace capacity to assure sufficient pig iron for production of steel ingots to meet mobilization needs. The completion date has been moved from Jan. 1, 1954, to Jan. 1, 1955, to allow for the additional tonnage.

The new goal of 87 million tons will be about 16.7 million net tons annual capacity over that in existence on Jan. 1, 1950. Capacity figures include facilities to produce pig iron for steel ingots and castings but do not include ferroalloy capacity.

Tin Savings Mount

Industry-government coordination in research has saved about 257,000 tons of tin since 1941 through tinplate conservation programs in production of cans. In making this statement, officials of American Can Co., New York, reported that 46,900 tons of tin were used in production of tin mill supplies for containers in 1941, while

by 1952 that figure had dropped to 27,772 tons, although 18 billion more cans were produced by the entire industry.

L. A. Attracts Industry

Western metal show makes Los Angeles its permanent home as the city makes big gains

LOS ANGELES is staking a claim as metalworking capital of the West. Henceforth that city will be the permanent home of the Western Metal Exposition & Congress, previously shared with San Francisco and Oakland, Calif.

At last week's exposition, exhibits of some 350 companies and their distributors bulged out the walls of Los Angeles' Pan-Pacific Auditorium. Metal Show Manager W. H. Eisenman rented the circus-size tent, then another, to house the show—largest of its kind held on the West Coast since 1929. (See page 86 for further news about the exposition.)

Crowds Pour in—Before last week was out, registered attendance was expected to reach 30,000. The San Francisco-Oakland section had 166 exhibits; attendance was 10,079.

More than ever before, the show reflected growing importance of western markets. Exhibits of eastern manufacturers in earlier shows were often left for their western distributors to plan. This year more eastern companies sent their best men to study Los Angeles' industrial achievements.

Heavy Industry—Interested servers discovered: California ranks sixth in metalworking plants employing over 20, of which two-thirds are in the southern half of the state. Some 300 eastern companies operate plants in Los Angeles. Of these firms, 71 located there in the last three years, including the Hevi-Duty Electric Co., Milwaukee, and Lindberg Engineering Co., Chicago, announced at the exposition. More aircraft workers were employed in southern California than in the entire U. S. in World War II.

The congress was a success, and. Seven national societies held week-long discussions on technical problems at Los Angeles' Hotel Statler.

Stampers: Pressing for Production

Their business is running 20 per cent ahead of last year's, although defense jobs slip. Automotive, appliance and electronics orders account for much of the gain

BELLWETHER industry, stamping, is ringing to the tune of good



business—at least 20 per cent better than last year's.

That's fine news not only for stampers but for industry generally, too. Stampings are used in such a wide variety of metalworking's products that good business among pressed metal shops means good business among most of metalworking which is ordering stampings. That optimism dominated the corridor talk at the Fourth Spring Technical meeting of Pressed Metal Institute in Cleveland last week.

Backlogs—Job stamping shops now have about 15 weeks' backlog of automotive orders, 29 weeks' for the military and 17 weeks' for all other customers. Backlogs for automotive and military buyers are holding steady but new orders for miscellaneous purposes are climbing—mainly from appliance and electronics manufacturers.

Job stampers are now doing about 28 per cent of their business for automotive customers, 15 per cent for the military and 57 per cent for other manufacturers. In all of 1952, the automakers got 27 per cent of the jobbing shops' production, the military accounted for 21 per cent and all others took 52 per cent. Nobody knows exactly what total business volume the jobbing industry is doing because of the difference in definition of what a stamping

plant is and because many of the small plants don't report their sales. A government study of job stampers other than automotive puts the 1951 volume at \$496 million. In 1952 that category's activities brought in only \$451 million, but this year business is virtually certain to exceed \$500 million.

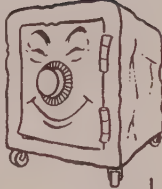
Troubles — The industry could do even better if it had all the steel it could use. Wallace F. Ardussi, president of Variety Machine & Stamping Co., Cleveland, and of PMI, reflects the opinion of many executives when he says, "Steel availability is one of our worst headaches." Sheet and strip of virtually all gages are causing problems.

The purchase of tooling is no problem. Jobbers turn out about half of their needs themselves.

Post-Korea Union Contract Trends Surveyed

THE DRIFT toward the union shop continues; the checkoff is assuming many different forms; and almost one out of two union contracts provide for an assured flow of money into union coffers through the double barrelled use of maintenance of membership and checkoff clauses.

Safe Fights: Thief Writes



MOSLER SAFE Co., New York, has won an unsolicited testimonial from a frustrated burglar.

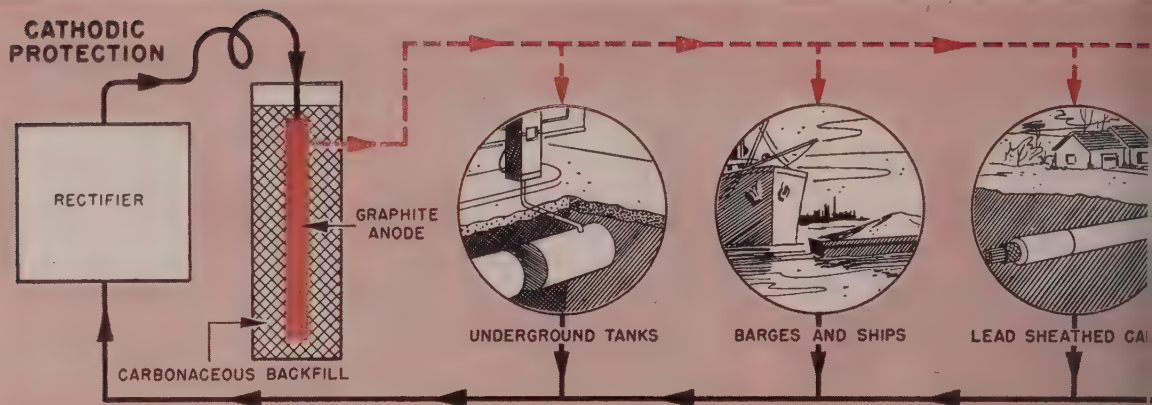
"I know when I'm licked," wrote the unhappy safe-cracker, after failing to open a Mosler-manufactured safe in a San Bernardino, Calif., department store. "I can truthfully state that this is the most difficult job I have ever attempted, and the manufacturer of this fine safe is to be congratulated."

Mosler may have contributed indirectly to a reduction in the San Bernardino crime rate. In his letter the burglar promised not to return to safe-cracking.

Those conditions were pointed up by a National Industrial Conference Board survey of 602 post-Korea union contracts, consisting of 277 AFL, 219 CIO and 106 independent union agreements and covering 3 million workers.

Box score on the results of the survey reads as follows:

Provision	Occurrence
Contracts providing for the union shop	34%
Modified union shop	11
Maintenance of membership clause in union shop contracts	20
Open-shop contracts	33
Contracts providing for the checkoff	72
Union shop contracts calling for the checkoff	60
Open-shop contracts calling for the checkoff	81
Dues to be checked off in the 435 contracts calling for the checkoff	100
Initiation fees to be checked off	48
Assessments to be checked off	20
Fines to be checked off	2
Reinstatement fees to be checked off	2
Assurance of union funds through both union security clause and checkoff	46
Assurance of union funds through union security clause only	21
Assurance of union funds through checkoff only	26
No union security clause or checkoff clause	6



New Materials and Methods Emphasize that . . .

CORROSION CONTROL Grows i

CORROSION PREVENTION is big business. Each year \$1 billion is lost by destruction of buried and submerged metal structures most of which can be prevented by the application of cathodic protection. Each year some \$2 billion is spent for painting just to protect metal structures and equipment against corrosion.

New Approach—Most company managements have become aware that the tax levied by corrosion can be reduced effectively by application of science and technology. A new attitude prevails: It's more sensible to prevent corrosion than to repair the damage.

This has lent impetus to the development of new products and processes to help industry cope with its corrosion problems. Some 85 companies showed what they had to offer in the fight against corrosion in exhibits at the National Association of Corrosion Engineers' conference in Chicago, March 16-20.

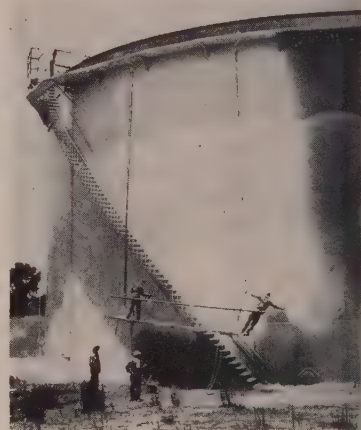
Reverse the Process—Buried pipe and other metal structures can be protected indefinitely by use of cathodic protection. Corrosion of metal in contact with soils or water results from the creation of anodic and cathodic areas by reason of differences in soil or water composition and other causes.

In the anodic areas, current leaves the surface of the structure and enters the soil or water,

causing pitting action. In the cathodic areas current flows from the soil or water into the surfaces of the structure and no corrosion occurs. The principle of cathodic protection is based on forcing direct current to flow from the soil or water into all surfaces of the structure, so that the entire structure is cathodic and in a non-corrosive state.

Two Methods—One widely used method of cathodic protection is through the combination of a rectifier or other source of d-c current and a graphite ground anode. Cathodic protection without use of external electric current employs sacrificial anodes of magnesium or zinc. Anodes of these metals set up a galvanic cell with the steel structure giving electric current that protects steel from corrosion. Savings of corrosion costs, with rapid economic pay off, are obtained with the application of cathodic protection to gas and water distribution systems, elevated water tanks, water treating tanks and equipment, well casings, heat exchangers, transmission tower fittings. Over a dozen companies are in the business. They have engineers experienced in this specialized field who stand ready to help industry make proper and efficient application of this method of corrosion prevention.

Save the Surface—Modern protective coatings engineered for the

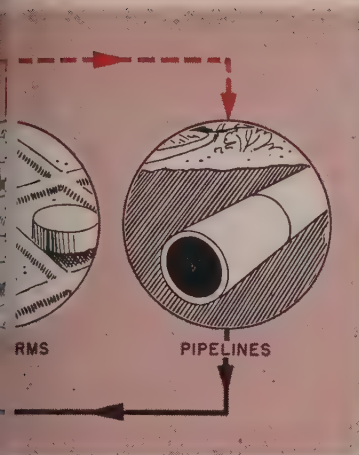


DeVilb

tough jobs fill a big gap in industry's arsenal of weapons for corrosion fighting. Tar base coatings have proved to be a real workhorse, providing maximum protection and low cost.

As new synthetic resins and solvents have been developed in recent years, new and increasingly efficient protective coatings have been produced to combat almost every form of corrosion in industry. A number of protective coatings producers showed off their wares at the NACE exhibition.

Low Alloy Steel Better — One highlight of the technical conference was a report by F. L. LeQue, International Nickel Co., and J. A. Boylan, Parker Rust-Proof Co., which gave an answer to the



Importance

question as to whether the improved atmospheric corrosion resistance of alloy steels is of any advantage when they are painted. The steels studied represented 20 per cent difference in atmospheric corrosion between an exceptionally low copper content ingot iron and a typical low alloy high strength steel.

The low alloy steel performed best, the copper steel next and the low content open hearth iron was worst whether painted or bare. The best performance was that of a low alloy high strength steel with zinc phosphate treatment. The paint system used was a common automobile finish.

Taking office as president of ACE on March 20 was Walter F. Rogers, Gulf Oil Corp., Houston, moving up from vice president.

The new vice president is Aaron Wachter, Shell Development Co., Emeryville, Calif. R. A. Brannon, Humble Pipe Line Co., Houston, begins his third year as treasurer.

Next Week in STEEL

The April 6 issue of STEEL will feature a special technical report on how to fight corrosion in your plant and on your products.

DMS Shapes Up

New terms, new wrinkles appear in the Defense Materials System

THE DEFENSE MATERIALS system Regulation 1 has been unofficially thrown into the Washington-alphabet soup by H. B. McCoy, acting National Production Authority administrator. It contains some new terms you'll want to become familiar with.

As yet, DMS Reg. 1 is unofficial because Congress hasn't extended the life of Title 1 of the Defense Production Act—which will be the basis for DMS as it is now for CMP. But Arthur Flemming, acting defense mobilizer, explained the need for Title 1 and DMS to the Senate Banking & Currency committee and passage seems assured.

Divided by Five—DMS Reg. 1 shapes up much as it was predicted in STEEL, Mar. 16, p. 67. Defense programs identified by symbols A,B,C,D and E will be carried out under DMS Reg. 1 (production) and Reg. 2 (construction). Tonnage set-asides of steel, copper and aluminum will be made for these defense needs. Latest estimates of defense takes for third quarter, 1953, are 30 per cent of aluminum production, 22 to 25 per cent of the copper, and 15 per cent of the steel; remainders of each metal are free for all other demands. Five new "allotting agencies" have authority to allot materials not only for direct defense and Atomic Energy Commission requirements but also for "military preference" requirements.

"Allotting agencies" are the Department of Defense, Atomic Energy Commission, National Production Authority, Defense Electric Power Administration and the Civil Aeronautics Administration. The term "military preference" covers indirect defense needs vital to the military and AEC programs. While not fully interpreted, this feature makes it possible for an allotting agency to provide a priority to equip a new plant, for example, where it could be proved the completion and operation of the plant is vital to defense.

Case of Preference—ODM and NPA officials say that military pre-

ference will be permitted only when defense needs demand it. The Air Force heavy press program is cited as being in the category of military requirements which will receive priority.

While still without official scaffolding, DMS amendments and interpretations are to be issued as soon as they are formulated to smooth out the transition from full materials control to a partial control system. Among exceptions to partial controls are six alloying elements, including nickel, to be kept under full allocation. Some provision is expected which will enable civilian industry to get its share of scarce machine tools, too. Where the old CMP allowed 30 to 40 per cent of output of machine tools to be shipped against unrated orders, the DMS regulation, as it now stands, would allow rated orders to take the full output of machine tools.

Same Old Effect—Another feature of the Defense Materials System which differentiates it from CMP is the omission of inventory control. A provision making it illegal to buy more priority material than needed for the use against which a rating has been issued has the virtual effect of such control, though.

In line with DMS, all civilian and defense supporting controlled materials tickets for the third quarter were cancelled last week in Direction 21 to CMP Reg. 1 and Direction 11 to CMP Reg. 6. NPA ruled, however, that second-quarter holdovers will receive preference over new unrated orders for third quarter delivery.

Canada Lifts Import-Export Ban

Canada lifted all export and import controls on shipments to and from the U. S. of all nonferrous metals, except nickel and nickel-bearing materials, in the form of ores, concentrates, scrap, fabricated forms and ingots.

Exporters and importers no longer need government approval on shipments across the U. S.-Canadian border of aluminum, copper, tin, tungsten, zinc, antimony, bismuth, brass, bronze, cadmium, cobalt, lead and molybdenum.



Ore stocks are comfortably high as spring finds . . .

Ackerman

Iron Ore Carriers Ready for Record Season

All-rail shipments helped keep iron ore stocks at lower lake ports in good shape. A record 100-million-ton carrying season is possible if demand remains high

THE 1953 ore carrying season may well be a record-breaking one. But, like most seasons, it's iffy.

An enlarged Great Lakes carrying fleet could bring down from upper lake ports some 100 to 105 million gross tons of iron ore. And they will, if the demands of the steel industry are sustained throughout the year. Such ifs as the weather and ice will also affect the total tonnage hauled, of course, as they do each season.

Opening Day—Pittsburgh Steamship Division, U. S. Steel Corp., hopes to inaugurate the '53 shipping before Apr. 1 as nine ships of the Pittsburgh fleet were scheduled to leave their lay-up berths on lower lake ports for the head of the lakes on Mar. 27. Most shippers will follow suit during the first week in April. That's a little earlier-than-average opening.

When six new vessels join the ore carrying fleet sometime during the 1953 season, the total lake fleet will number 292 vessels, compared to 289 ships at the end of the 1945 season, the previous peak. Big difference in the comparison comes not in total number of vessels, but in trip capacity of the two fleets—

3,018,00 gross tons in 1953, 2,787,000 gross tons in 1945—and in increased speed of the modern vessels which enable them to make more trips per season. Thirty-one vessels have been retired from lake service since 1945 and have been replaced by these newer, faster ships.

Welcome Harbinger—Opening of the shipping season this year is looked forward to, but not as desperately as was predicted last fall. With stocks at lower lake ports and furnaces totaling 29,948,749 gross tons on Mar. 1, 1953, compared with 29,207,005 gross tons a year earlier, the outlook is good. Even if the season does not open until mid-April stocks will be above the 20-million-ton mark. Shortages are local affairs in certain grades of ore.

Partial answer to comfortable iron ore stockpiles was the 8-week steel strike last year, which conserved ore already down the lakes. All-rail shipments were an important factor, too. Rail shipments amounted to 5,524,688 gross tons in 1952, down from the 7,918,798-gross ton peak in 1951, but well above the normal of 1948-1950 of

2 to 2.5 million gross tons. Rail shipments were about 300,000 tons in February, 1953, and will dip when the lake traffic opens. The probably will be at '52 levels over the year, however, and will therefore remain a significant factor in ore haulage.

Still a Record—More conservative members of the lake shippers are predicting a 95 to 100 million gross ton season in 1953. At that it will be a record-breaker; previous best year was 1942 when 98 million tons were brought down.

Quebec OK's Ungava Bay Plan

Cyrus S. Eaton, who heads the Steep Rock iron ore development in Canada, received permission from the Quebec government to proceed with developing vast iron ore deposits near Ungava bay in the far northern region of the province.

Atlantic Iron Ore Ltd., which Mr. Eaton organized, will conduct the operation. Canadian government geologists will help make studies of the area. A major problem to be solved is the fact that Ungava bay, the most economical outlet for the ores, is ice-locked about nine months each year. The deposits are so far north that the nearest and most logical markets will be in Europe rather than America.

Schiess Forms U. S. Affiliate

Schiess A. G., one of Europe's largest builders of heavy machine tools, is investing \$250,000 to form an American affiliate, American Schiess Corp. The Dusseldorf, Germany, manufacturer will send engineers and mechanics to provide technical assistance for automotive, aircraft, shipbuilding and other plants using Schiess equipment in the U. S. and Canada.

General offices will be located in New York, while the company plans to establish engineering headquarters and servicing facilities in Pittsburgh.

Robert C. Zeile was appointed manager of the Pittsburgh office. Formerly he was Pennsylvania district manager of Kurt Orban Inc., New York.

NTDMA Announces New Survey

National Tool & Die Manufacturers Association will conduct a survey of the contract tool and die

try to determine what is being done in apprentice training. The association hopes the survey will stimulate interest in expanding such programs which must develop the highly skilled craftsmen needed for the industry.

ITDMA also is preparing a 20-minute color motion picture called *Tool and Die Making—Keystone of Mass Production*, to be released later this year. It will be used in a program to encourage young men with the proper mechanical abilities to become tool and diemakers.

Missile Output Launched

Manufacturers looking for government prime or subcontracts will look into the opportunities offered by the guided missile program.

Several thousand manufacturers already engaged in guided missile production either as primes or subcontractors, says Brig. Gen. Thomas K. Sargent, director of the Army's research program on guided missiles and rockets. He spoke before the American Society of Tool Engineers at their Detroit meeting. Between 25 and 30 major companies may hold large prime contracts when the program reaches its peak, he indicates, and for each of these firms up to 1000 subcontractors may be needed.

The U. S. at present has two guided missiles in production — "Nike" and another, still unnamed. Based on knowledge and know-how gained from the German V-2 Rockets, the new missiles are greatly improved over their World War II ancestor. Both guided missile types are large enough to carry a variety of warheads, probably including the atomic head.

No Stretch-Out Seen

Few manufacturers will be affected by expected cuts in the Defense department's budget

PROPOSED CUTS in military expenditures probably won't cause a general stretch-out of defense production. Only manufacturers whose defense items are outpacing the rearmament program will find their delivery dates moved ahead, say Defense department officials.

The monthly rate of military expenditures, which rose steadily in the final months of the Truman administration, has been stopped in its tracks at the \$3.6 billion level of January. Defense spending in the coming months is expected to remain at this level or taper off somewhat. The department's obligational authority for fiscal 1954 may be lowered as much as \$5 billion under the \$41.5-billion ceiling requested by President Truman.

Output Synchronized—Few manufacturers will be affected much by the economy program, however. Most of the saving will come from reduction of manpower in the armed forces and government agencies. Nevertheless, some readjustment will occur in military output as the government attempts to synchronize the various factors in the defense economy.

Defense Secretary Wilson says that the previous administration over-shot its mark in its preparations for an all-out war economy. Too many stand-by plants were erected and tooled up, he indicates. Easy-to-get equipment, he said, was bought and paid for before it could be matched with long-production items needed to make finished equipment.

CHECKLIST ON CONTROLS

Materials Orders

COPPER — Amendment of Mar. 20, 1953, of NPA Order M-16 and revocation of Direction 1 to M-16 remove allocation control over copper scrap and copper-base alloy scrap, copper-base alloy ingot, blister copper, copper and copper-base alloy shot and waffle and copper precipitates, effective Mar. 20.

MANGANESE—Amendment 1 of NPA Order M-80, issued and effective Mar. 20, 1953, redefines ferromanganese in the order to include standard manganese having a content of 74 to 76 per cent manganese as well as the grade previously known as standard manganese with 78 to 82 per cent manganese content.

Defense Materials System

STEEL, COPPER, ALUMINUM—Defense Materials System Regulation 1, covering production, and Defense Materials System Regulation 2, covering construction, both issued and effective Mar. 23, 1953, set up a new materials control system limited to assuring deliveries of enough steel, copper and aluminum for the Department of Defense and the Atomic Energy Commission.

Controlled Materials Plan

CIVILIAN DECONTROL — Direction 21 to CMP Regulation 1 and Direction 11 to CMP Regulation 6, both issued and effective Mar. 23, 1953, remove both controls and program assistance from civilian production and construction requiring controlled materials beginning with third-quarter requirements.

NPA Regulations

DO RATINGS—Direction 6 to NPA Regulation 2, issued and effective Mar. 23, 1953, makes five changes in DO ratings to achieve conformance with the basic changes created by Defense Materials System Regulations 1 and 2.

BASIC RULES—Amendments of Mar. 23, 1953, of NPA Regulations 2 and 3 bring the operation of the priorities system in this country and between Canada and the United States into conformity with the new Defense Materials System. Both amendments were effective Mar. 23.

Mineral Order

HOARDING—Mineral Order 1, which prohibited hoarding of various strategic materials, was revoked effective Mar. 19, 1953.

Appointments in Washington

Kenneth W. Gemmill, member of the law firm of Barnes, Dechert, Price, Myers & Rhoads, Philadelphia, was appointed assistant to the secretary of the treasury.

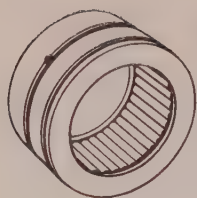
Phillip Young was appointed chairman of the Civil Service Commission.

Louis S. Rothschild, Kansas City, Mo., was appointed chairman of the Advisory Board of the Inland Waterways Corp., Commerce department.

Brig. Gen. Walter K. Wilson Jr. was designated by the Army Engineer Corps as Mediterranean division engineer with headquarters at Casablanca, French Morocco.

SELECTED DEFENSE CONTRACTS IN EXCESS OF \$100,000

PRODUCT	CONTRACTOR
Airframe, Warehouse	Northwestern Motor Co., Eau Claire, Wis.
or Vehicle Parts	Columbus McKinnon Chain Corp., Tonawanda, N. Y.
for Diesel Engines	General Motors Corp., Detroit
Is, 90 mm	Standard Steel Spring Co., Coraopolis, Pa.
Is, 81 mm	Nesco Inc., Milwaukee
Is, 90 mm	Tacoma Metals Products Co., Tacoma, Wash.
ers, Percussion	Harper Wyman Co., Chicago
Is, 90 mm	General Motors Corp., Detroit
Aluminum	Colt's Mfg. Co., Hartford, Conn.
Arms Parts	Saginaw Products Corp., Saginaw, Mich.
Pressure Gages	U. S. Gage Div. of American Machinery & Metals Inc., Sellersville, Pa.
valometers	Abrams Instrument Corp., Lansing, Mich.
erators	Jack & Heintz Inc., Cleveland
era Kits	Douglas Aircraft Co. Inc., Santa Monica, Calif.
phone Switchboards	Automatic Electric Corp., Chicago
ce Heaters, Oil Fired	Viking Mfg. Co., Cleveland
ts, Hydraulic	Weaver Mfg. Co., Springfield, Ill.
chlights	Strong Electric Corp., Toledo, O.
Iron Tubes	Litton Industries Inc., San Carlos, Calif.
crete Mixers	J. D. Adams Mfg. Co., Indianapolis



Industry Gets the Needle

In their proper places, needle bearings have been of great value in cutting down space requirements and carrying heavy radial loads

NEEDLE BEARINGS, in a period of development in this country covering only about 20 years, have come a long way, and they still have a long life ahead of them. They have advanced from relatively few uses until now you find them in applications ranging from giant aircraft to wooden artificial legs.

The needle bearing generally refers to a unit of a number of individual needles or small diameter rollers—each six to ten times longer than its diameter—encased in a race to direct their action. Unlike the conventional roller bearing, there is no cage or separator retaining the rollers. However, the needles can be used individually where the parts in which they are installed form their own race, as in automatic transmissions and universal joints. Two big advantages of such bearings are they take less space and have a maximum radial load-carrying capacity.

Bonanza—Automatic transmissions have proved to be a real boost to those manufacturers who emphasize production of loose rollers or needles. G. M.'s Hydra-Matic transmission has from 170 to 190 needles compared with 50 or 60 in the older manual transmission. And last year 2.1 million new cars were equipped with no-shift mechanisms. Another heavy user of rollers is the power steering unit, where space is at a premium. In all, the new car can have as many as 400-500 needles, and auto production may hit a new high this year. So could needle bearing production.

The aircraft industry also has been one of the heaviest users of needle bearings. Some makers think that it was this industry that proved the value of needle bearings. They were used in some World War II planes, and since then have been used wherever they have been found applicable. The giant B-29 uses something like 3000 units in its construction.

Heavy Users—Other heavy

users include farm machinery, machine tools, textile machinery, gear pumps, power shovels, oil well equipment, road machinery, universal joints, appliances, portable power tools and material handling equipment.

There are various types of needle bearings to fit the wide variety of jobs mentioned above. Where light load and smoothness of operation are the prime characteristics, the shell-type bearing is best. This type, made by Torrington Co., Torrington, Conn., has a surface-hardened thin-drawn shell as the outer race. If ability to withstand heavy duty and shock is required, a heavier, precision-machined housing is used.

No Difficulty—The bearings are made mostly of 52100 steel alloy, which has not been difficult to obtain. In fact, the industry has had little, if any, production problems in recent years.

The main difficulty has been to see that they are not applied to jobs where they are not suitable or recommended. Like all anti-friction bearings, they have their proper uses and do not fit every job.

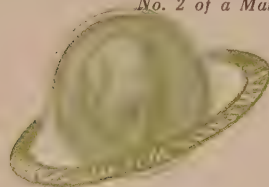
Sustaining—However, new uses are being found constantly—enough to keep the eight companies making needle bearings working at a fast pace. The eight are: Torrington; Orange Roller Bearing Co. Inc., Orange, N. J.; Roller Bearing Co. of America, Trenton, N. J.; McGill Mfg. Co., Valparaiso, Ind.; Kaydon Engineering Co., Muskegon, Mich.; American Roller Bearing Co., Pittsburgh; Bremen Bearings Inc., Bremen, Ind.; and Smith Bearing Co., Trenton, N. J.

Last year, according to one manufacturer, the industry sold about \$7 million worth of the bearings, or about 2 per cent of the entire anti-friction bearing output. That was lower than 1951 production because of the steel strike. This year looks to be better than that, with new uses coming in and auto production going up.

No. 2
STEEL's
Management
Series . . .

The editors of STEEL here present the second in a series of ten articles in its Program Management. The complete st.

1. Public and Community Relations
(Feb. 23, page 53)
2. Industry-Government Relations
3. Research, Basic and Product
4. Purchasing
5. Forecasting Business Trends
6. Distribution—Post-Emergency Changes
7. Labor and Industry Relations
8. New Materials
9. Depreciation and Re-Equipment
10. Market Research



Let's Do Our Part In This Business Of Government

*"... in this spirit let us together
turn to the great tasks before us."*

—DWIGHT D. EISENHOWER, *State of the Union Message*

JOHN Q. PUBLIC identifies the present national administration as a businessman's administration.

If it is a good administration, he will like it. If it restores some semblance of soundness to our national economy, re-establishes integrity in government, offers the opportunity for prosperity, freedom and peace, then businessmen will rise in his estimation. The business community will gain in influence.

But if it fails in these aims, John Q. may turn back to the big government boys. He will harken to the demagogues and the socialistic planners. Then the present administration may be no more than a brief pause in a New Deal tide.

You're In — For twenty years businessmen have talked of the superiority of the free enterprise system. We have boasted of our

ability, if given a chance, to make available the benefits of a free, competitive economy to all.

Now is the chance.

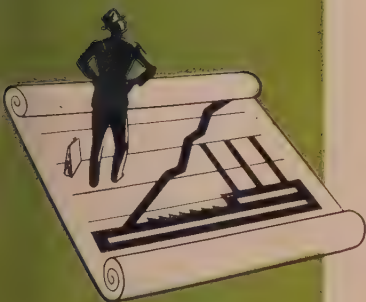
The challenge is not easy.

The Problem

After ten weeks in office, the Eisenhower administration's domestic policy is evolving slowly and undramatically. It is in marked contrast to the "first hundred days" of President Roosevelt's first term in 1933.

The administration moved rapidly to remove controls from wages, prices and materials. But aside from the return to free markets there is as yet little action in translating campaign promises into accomplished fact.

Clean-Up Job — The reason, of course, is that after twenty years





TAX PROBLEM—High on the list of what business wants is reform in the national tax structure and a reasonable limitation of the government's take. Many a management man dreams of the day when net income again can be greater than the tax take. Photo shows 12-foot stretch of tax returns and schedules required of Republic Aviation. The check for taxes was also hefty—\$19 million



GOOD-BY TO THIS—Remember when troops chairman, from his office in 1944 after President Roosevelt ordered his plant seized because the company wouldn't accede to union demands? The issue of plant seizure to enforce union demands again arose in 1952 when President Truman seized the steel industry. The Supreme Court ruled his act improper

of waste, extravagance and duplication, the greatest job confronting the new administration is that of clearing away the debris.

"The size and complexity of our government staggers the imagination," says Sinclair Weeks, secretary of commerce. "We shall clean up the mess. But the mess is worse than the public thought. The new administration has the backbone for the job. But we do not have enough new brooms."

Like an Iceberg—Another member of the administration likens the situation to an iceberg. "You can see maybe one-ninth of it. What you can't see is the eight-ninths that is under water."

President Eisenhower in his State of the Union message warned: "It is important that all of us understand that this administration does not and cannot begin its task with a clean slate. Much already has been written on the record, beyond our power quickly to erase or to amend. This record includes our inherited burden of in-

debtedness and obligations and deficits."

Obstacles—Businessmen find it hard to comprehend the difficulties that are confronting the new administration. Take the matter of personnel alone. Most of the hundreds of thousands of government employees are under Civil Service regulations. It is virtually impossible to take them off the government pay roll.

While the majority of such employees are reasonably intelligent, industrious and efficient, they are not much help in clearing away the debris of an overly complex governmental structure. Naturally, they wish to protect their jobs. And most of them like the idea of big government. They have grown up in a big government atmosphere during the past twenty years. They in effect constitute a mass of inertia to the new administration.

Needed: New Brooms — On the other side, consider the problem of recruiting able businessmen to help clean up the mess. True, President

Eisenhower has recruited a team of exceedingly able men. He answered the call to the government at tremendous personal sacrifice. But there aren't enough men available at the second level of authority. Most any businessman who has served in Washington can tell you why.

The president of a Philadelphia metalworking company tells his story. When the new administration team was being recruited he was approached by a cabinet member and persuaded to accept a job in the new administration. He was reluctant to do so. As president of his company he was paid \$40,000 a year. In addition he was building up a pension reserve, owned stock in the company. His family was happily situated in Philadelphia. His children were in school.

But he recognized the need for doing a job in Washington and accepted. His motives were wholly patriotic.

When he arrived in Washington, he learned that the salary for he

ernment job was in the \$8000 bracket. But he couldn't just start the job he had been begged to take. Once in Washington, he was asked to fill out a long and complicated application for the job. He was compelled to reveal in detail personal and financial history. Then he had to wait around Washington for weeks until he was cleared for the job.

What Business Can Do

The transition from private industry to governmental jobs is not easy. But the fact remains that the most important step in improving business-government relations is for industry to detach more of its top men for nonpolitical government jobs.

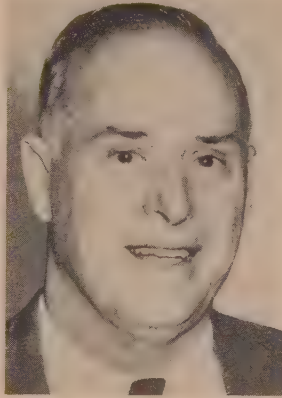
Industry "can protect the interests of both itself and the public by lending its personnel," advise Robert Heller and F. L. Elmendorf of Robert Heller & Associates, Cleveland. These men are in a unique position to judge industry-government relationships because they work in both fields. As management consultants they list among their clients many of the big chip companies of industry. They assisted the government in the unification of the armed services, worked for the Hoover Commission on the reorganization of the executive branch, wrote the first practical plan for the reorganization of Congress, and currently are working on reorganization of the Post Office and other government functions.

The benefits of lend-leasing business personnel to government work two ways. It not only results in a better understanding of business problems by government but it also results in a better understanding of the problems of government by businessmen.

Lend-Lease—Inland Steel President Clarence B. Randall advocates lend-lease of business talent to government.

"We need a new tradition of public service, a new habit of mind by which businessmen actively seek participation in public affairs. . . every business institution that believes in the preservation of free enterprise should make this possible, and encourage us to do so.

"We will be better men when we



By SINCLAIR WEEKS
Secretary of Commerce

Sunnier Business Climate in Washington . . .

Were the Weather Bureau of the Commerce department operating an economic observation balloon, it would report today that the Washington climate for business is much warmer than in years.

In the Eisenhower administration business is not looked upon as the prey of a Robin Hood government that hampers its scope with unnecessary controls and excessive taxes, or makes it the victim of punitive malice.

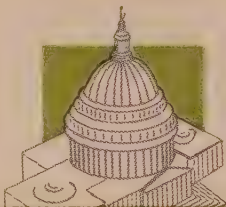
The new administration intends to apply business principles of thrift, efficiency and real public service to all phases of government.

The Department of Commerce, the traditional collector and publisher of significant statistics, intends to give industry the most accurate and complete facts available within our means on which business can base wise judgment and sound action. In our various operational agencies, like Maritime Administration, Civil Aeronautics, Patent Office, Public Roads and others, the same spirit of service is uppermost.

We plan more use of advisory groups from different fields of private industry in determining department policies.

Commerce is the voice of business in government. It is bringing to the attention of others in public office the problems and opinions of the business community. The administration thus has the business point of view before it as national policies and actions are formulated and carried out.

We in Commerce want business to realize that this is our role and to utilize it to fullest advantage by continuously presenting its ideas to us for further action.



How to Talk with Washington

CHAMBER OF COMMERCE OF THE UNITED STATES NATIONAL ASSOCIATION OF MANUFACTURERS

On broad national issues, the National Chamber and NAM serve to determine the views of business, set up a common program of business thought and action, and bring this program to the attention of the public, the Congress and the executive branches of government. Both maintain strong Washington offices, manned by men skilled in their jobs. Both issue publications to keep members informed of pending legislative and executive actions.

TRADE ASSOCIATIONS

On specific industry problems, your best voice may be your trade association. Most trade association executives spend a substantial portion of their time in Washington, know whom to see about what.

INDUSTRY ADVISORY GROUPS

One of the most direct channels of communication between business and government is industry advisory groups. The Bureau of Census was the first to set up such committees in 1902, now has close to 100. National Production Authority has more than 500, which will be continued after NPA is cut back at midyear. Benefits often are contingent on attitudes of representatives.

WASHINGTON OFFICE

If your company is big, you may maintain a Washington office. If you are that big, you should already know the answers.

WASHINGTON REPRESENTATIVES

Thousands of representatives are available in Washington to handle every conceivable type of contact or problem for a fee. Some are reliable and effective. Others are phony influence peddlers. Problem is selection.

INDIVIDUAL EXECUTIVE CONTACT—In Washington

If your problem is concerned with policy or program, it may well pay to go to Washington to talk to a responsible government officer. Set up your appointments in advance and be sure they are with men high enough to talk policy or program. Waste no time with the Indians.

INDIVIDUAL CONTACT—At Local Level

If your problem is one of information or service, you may get complete satisfaction from the local or area office—with expenditure of less time and expense. Field offices of the Department of Commerce alone are processing 160,000 inquiries a month. During the war, field office inquiries reached a peak of 350,000 a month.

CONGRESSMEN

Don't forget your representatives and senators and don't let them forget you. Congressmen depend on the thinking of their constituents more than you may believe. They are anxious to hear what you think and your beliefs may often influence how they vote and what they say on the floors of Congress. Shun the inspired, pressure-type of telegram and letter; give them your honest thinking.

return, and the business will have a stronger team in that substitute will be trained and tested in our absence.

"Nor am I concerned at what this will cost in money, since the unbelievable cost of letting others do these jobs for us already has been fully demonstrated."

Need Financial Support — Mr. Randall suggests that our laws be changed to permit business to fully reimburse the added expense of leaving away from home for those who are willing to make the personal sacrifice required.

"I have never personally known or seen documented a case where a businessman has used such a position to help unfairly either himself or his company. It is the maddest sort of folly to deny good citizens, both corporate and individual, this avenue for serving their country by not letting their companies hold their incomes level."

Lend Ideas — Businessmen who do not go to Washington can be of great help by giving government officials the benefit of their honest thinking on national problems. The new administration gives every indication it will receive such ideas sympathetically.

During the wartime emergency, many industrialists came into close contact with the government by serving on industry advisory committees. These served as a means of placing industry's thinking on specific problems before the appropriate government officials and also acquainted businessmen with many of the perplexing problems faced by the government agencies.

The more than 500 industry advisory committees established under the National Production Authority will be continued after NPA itself is pared down at midyear. They will continue to offer a channel of direct communication between business groups and the Department of Commerce. Other government divisions likewise have industry advisory committees. The Census Bureau organized its first in 1902 and boasts more than fifty years of co-operative interchange of ideas with businessmen.

Talk With Government — Better industry-government relationships depend on better mutual understanding. Such understanding in



DIRECT COMMUNICATIONS—Industry advisory committees established under the National Production Authority bring industry and government representatives together face to face to discuss specific problems. Result often is better mutual understanding of business by the government representatives and a better understanding of government problems by the businessmen

result from better communication between businessmen and government people in policy-making jobs. This is the consensus of industrial executives and top government people interviewed by the editors of this magazine.

Sometimes the beliefs of the business community best can be presented to the government through the various associations organized by business. These groups are acquainted with all the correct channels of communication, generally are sensitive to the feeling of the business community, and are skilled in placing the facts before the proper government people.

At other times, personal presentation by the business executive is more effective. Both business and government men agree it may be dangerous to let business associations—or your lawyer—do much of our talking or thinking for you.

What Business Wants

Several score metalworking executives were asked by the editors what they want from the government.

Their replies covered much common ground. Without exception, they asked for nothing in the way of special privilege or treatment. They push no special projects.

What they want is a government

that would make available to all Americans the benefits of our vast productive machine on a fair and ever-increasing basis.

Integrity—Most frequently mentioned aim was for integrity in government. They believe that a government that lacks moral soundness cannot provide for the welfare of the people nor execute properly the true functions of government.

Economy—Waste and extravagance in government expenditures and the duplication of effort among the many divisions of government are topics on which any businessman will become articulate.

There is almost unanimous belief that the national government during the past twenty years has assumed functions that are unnecessary and improper. There is a hope that many of these functions, if they are necessary at all, can be returned to the states or local subdivisions. The belief is general that one of freedom's greatest threats is too much government too far away from home.

Businessmen recognize that world conditions have made necessary a large part of government spending for defense. This they do not begrudge, provided that steps are taken to make each dollar buy a dollar's worth of material. Inefficiency and waste in the procurement of military supplies may offer

the greatest opportunities for economies.

The task of reducing expenditures cannot be accomplished by the administration and the Congress alone. Much of the pressure for government spending comes from people pushing pet projects.

Taxes—Rigorous economy is recognized as the key to tax reduction. But businessmen realize that the huge national debt and the obligations already incurred plus the necessity for continuing high defense expenditures limit the possibilities of debt reduction.

They believe that the present tax system is penalizing incentives to work and to produce and that such incentive-killing provisions should undergo close scrutiny and reform.

Generally they favor a constitutional amendment to limit the taxing power of Congress.

Less Intervention—The abolition of controls by the new administration generally is approved by business. The business community believes controls at best should be only a temporary expedient during periods of actual emergency.

They believe that a free economy will regulate wages, prices and the flow of materials better under any but actual emergency conditions far better than the best planned controls.



Government Services Available

COMMERCE DEPARTMENT:

Office of Business Economics—publishes *Survey of Current Business* reporting gross national product, business population data, inventories, business trends, other economic information.

Division of Commercial Standards—Develops industry standards upon industry initiative.

Office of Technical Services—Publishes declassified government technical information. Sponsors National Inventors' Council to encourage inventive contributions to defense.

Trade Association Division—Publishes list of trade associations and calendar of their meetings.

Census Bureau—Makes special marketing analyses studies on a fee basis; carries on regular census statistical work.

Civil Aeronautics Administration—Responsible for air safety.

Weather Bureau—Provides special weather forecasts to industry.

Maritime Administration—Administers shipping and shipbuilding subsidies. Leases ships. Places shipbuilding contracts.

Patent Office—Publishes *Register of Patents Available for Licensing or Sale*. Carries on regular patent work.

Inland Waterways Corp.—Operates the Federal Barge Line as a common carrier. (This property is being offered for sale to private industry.)

Office of Distribution—Will make distribution studies for business and industry. Is not yet off the ground.

Office of International Trade—Fosters and promotes foreign commerce. Controls exports. Has charge of that portion of the Technical Co-operation Administration Point Four program which aims at industrializing backward countries to make them better customers for United States equipment and industrial materials. Publishes *Foreign Commerce Weekly*.

National Production Authority—Certifies the need for expansion programs and projects. Encourages re-

search and development work to produce more critical materials. Stimulates expansion for production of military end-items. Continues materials control authority. Limited after June 30 to providing priorities for military and defense-support needs.

Bureau of Standards—Responsible for accuracy of measuring instruments, gage blocks and other devices, for tests under the federal specifications. Conducts research in many materials. Conducts a Research Associates Plan whereby industry, by individual companies or groups, absorbs part of the cost of research and development work.

Office of Small Business—Publishes daily the *Consolidated Synopsis of Proposed Procurements and Contracts Awarded*, which will cost \$7.00 a year on subscription basis starting Apr. 1.

DEPARTMENT OF DEFENSE:

Now metalworking's biggest customer. Provides financial assistance to companies prosecuting research and development work having potential defense value. Conducts Procurement Information Office which answers questions about defense procurement. Maintains Defense Supply Management Agency which develops military specifications and, in conference with industry representatives, conducts standardization work to increase interchangeability of parts of vehicles, internal combustion engines, refrigeration equipment, air conditioning equipment.

INTERIOR DEPARTMENT:

Bureau of Mines—Conducts co-operative research programs with industry often contributing (as American Iron & Steel Institute contributions to maintenance of the bureau's manganese-from-slag program). Tests mining supplies and equipment on a fee basis. Conducts economic studies in co-operation with industry. Maintains a co-operative motion picture program with industry paying the expenses, the bureau distributing the films. Conducts wide range of studies in liaison with private industry—as development of titanium processes, development of synthetic liquid motor fuel—from the mineral to the final end product.

They believe that the less unnecessary intervention by government in business the better.

Profit—The lack of understanding of the true role of profit in our economy amazes and frustrates most businessmen. To them it is basic in our system. It is why this country with less than 6 per cent of the world's land area and 7 per cent of the world's population is able to boast 70 per cent of the world's automobiles, 60 per cent of

its telephones, half of its radios, half of its steel production and 40 per cent of the total manufacturing output.

To this end, many business enterprises or groups of business enterprises are supporting courses in basic economics and other programs to further better public understanding of the profit-and-loss system.

Full Output—The output made possible by the American system is

shared by all the people in this country. The automobiles, telephones, radios, television sets and other conveniences are found in all the homes of America.

Business wants recognition of this fact in government.

Welfare — Progressive social legislation and welfare plans that will protect the aged, disabled and the destitute have wide support in business. However necessary and desirable social security is, be-

Industry

ATOMIC ENERGY COMMISSION:

Places extensive research, development, and operating contracts. Authorizes contractors to sell isotopes to make radiographs, and for use in industrial processes, noncontact thickness gages, and the development of new and improved industrial processes.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS:

Performs basic research work in aeronautics. Places research contracts with institutions not only to amplify its own efforts but to train new research workers in this field.

NATIONAL SCIENCE FOUNDATION:

Finances basic research in all fields of industry, and fosters and encourages scientific research generally.

GENERAL SERVICES ADMINISTRATION:

Responsible for development of all federal (not including military) specifications. Responsible for non-military government procurement, and also stockpile procurement.

Defense Materials Procurement Administration—Authorizes grants, guaranteed market contracts and other financial and technical assistance to encourage production of critical minerals and metals in which the United States is deficient. Financing activities may cover all steps from the ore to the finished metal product. (Powers after June 30 still to be determined by Congress.)

OFFICE OF DEFENSE MOBILIZATION:

Top co-ordinator of all defense production needs. (Powers after June 30 still to be determined.)

DEPARTMENT OF AGRICULTURE:

Farm Machinery Division—Works co-operatively with manufacturers on development of apparatus for farms. Has worked recently, for example, on corrosion of sugar beet harvesting, fertilizer placement and pest control machinery, also metallurgy of plow steel. Performs extensive testing work.

SMALL DEFENSE PLANTS ADMINISTRATION:

Assists small business (a term defined as companies employing no more than 500 workers, or as companies not the leaders in their industries, and hence applying to nearly all business) in obtaining government loans, needed materials, and defense and other government contracts; and in undertaking expansion programs. Provides technical and managerial assistance. Makes special surveys when necessary. Acts as the sponsor and friend of small business having dealings with other government departments and agencies on tax, renegotiation, labor and other matters. (Continuance of SDPA beyond June 30 remains to be effected by Congress.)

Geological Survey—Conducts water and mineral surveys for industry.

Defense Agencies whose status after June 30 remains to be fixed by Congress:

Defense Minerals Exploration Administration—Provides financial assistance for exploration of 34 critical minerals.

Defense Electric Power Administration—Responsible for electric power expansion program, also for maintaining supply of power to all defense establishments.

Defense Solid Fuels Administration—Responsible for necessary expansion in capacity to produce solid fuels, including authority to recommend defense expansion loans.

Petroleum Administration for Defense—Responsible for maintenance of petroleum products production.

MUTUAL SECURITY ORGANIZATION:

Responsible for all mutual security and Point Four technical and economic assistance. Publishes information about foreign trade opportunities. Guarantees porters against expropriation and inconvertibility of foreign funds. Sends industrialists abroad to help mutual security and Point Four programs. When assistance is principally Point Four rather than military, work is carried on through State department's Technical Co-operation Administration.

RECONSTRUCTION FINANCE CORPORATION:

Makes direct government loans. Helps prospective borrowers to get bank loans and frequently participates in such bank loans.

FEDERAL TRADE COMMISSION:

Maintains Trade Practices Division to assist industries in formulation of approved trade practice codes.

DEFENSE TRANSPORT ADMINISTRATION:

Responsible for maintenance and necessary expansion in various fields of transportation.

Businessmen believe it is no substitute for productive employment and thrift. They believe it should be limited to providing a minimum layer of basic protection, leaving ample room for individual thrift and voluntary group effort.

Members of the Chamber of Commerce of the United States, representing a cross section of all kinds and sizes of business, voted overwhelmingly for a sweeping expansion of the social security program

to cover all working and all retired persons. The plan would extend social security benefits to some five million aged persons who do not qualify under the present program.

Labor Relations—Business believes better labor relations would result from a minimum of government intervention. It believes government should lay down the ground rules for collective bargaining and establish equality for employers and unions.

The partisanship of recent national administrations in favor of the big labor bosses is bitterly resented.

Seizure of plants to enforce labor demands is regarded as a wanton infringement of freedom.

Stability—Last of all, business would like to see the re-establishment of stability in governmental policy and in the dollar.

Stability of policy would permit long-range planning to build the

facilities to provide new jobs. Business regards the expansion of job opportunities as one of its responsibilities. Every year about two million people enter the labor mar-

ket and about 1.3 million die or retire. Thus is created a need for about 700,000 new jobs annually.

Businessmen estimate that each job requires about \$11,000 in tools.

If business and the country are to prosper, the jobs must be available. Given reasonable ability, business believes it will provide them.

We Believe . . .

that regular census statistics and statistics of major public interest are legitimate government activity. Many statistical services now performed by the government can be rendered more effectively and appropriately by private agencies and should be eliminated as a government activity. Importance of statistics should be weighed against the reporting burden placed on respondents.

BUSINESS STATISTICS

that the trend toward ever larger federal government should be reversed. Service responsibilities should be performed by the

CENTRALIZATION

smallest units competent to handle them adequately and economically. The federal government should withdraw to those areas of national interest and concern which require a national administration. To enable the states and local government to operate effectively, certain taxing powers should be reserved for the subdivisions.

that wage and price controls should be imposed only as a temporary expedient during an actual emergency. At all other times government wage and price fixing is unnecessary.

CONTROLS

that methods of depreciation accounting should be changed to encourage constant replacement of equipment and facilities to keep the industrial machine as efficient as possible. Such reforms should reflect the changes in the purchasing power of the dollar.

DEPRECIATION

that the primary function of government should be political, not economic. Government should not participate in production and distribution activities which can be conducted more effectively

GOVERNMENT COMPETITION

by private enterprise. Subsidies, freedom from taxation and improper allocation of costs may give an apparent advantage to government but the taxpayer pays in the end. In large development projects, such as atomic energy, the government is the logical operator.

that resolute insistence upon economy is a must. It is essential to lower taxes, reduction of debt and a stable economic system. Waste, which characterizes many government operations,

ECONOMY IN GOVERNMENT

including the military, must be fought at every turn. Reorganization based on Hoover Commission recommendations should be encouraged. Spending programs which are not strictly essential are luxuries and should be treated as such. Business must

recognize that much of the pressure for spending comes from outside government and should be discouraged at the source.

that legislation and its administration should provide equality for unions and employers. A minimum of controls should be exercised by government, and voluntary rather than government imposed solutions to disputes encouraged. Primary function of the government is the protection of the public.

LABOR RELATIONS

that an extensive program of research and development is necessary to keep the nation strong and prosperous. To this end the patent system should be maintained, including freedom of patentees to grant licenses restricted as to use.

PATENTS

that seizure of property by the executive branch, as in President Truman's seizure of the steel industry, violates a fundamental constitutional guarantee.

SEIZURE OF INDUSTRY

that new and small enterprises will make enduring progress only if a favorable economic climate is provided. Encouraging of risk capital, fair enforcement of laws against monopoly and restraint of trade, and a tax structure that will permit growth are more important than preferential treatment.

SMALL BUSINESS

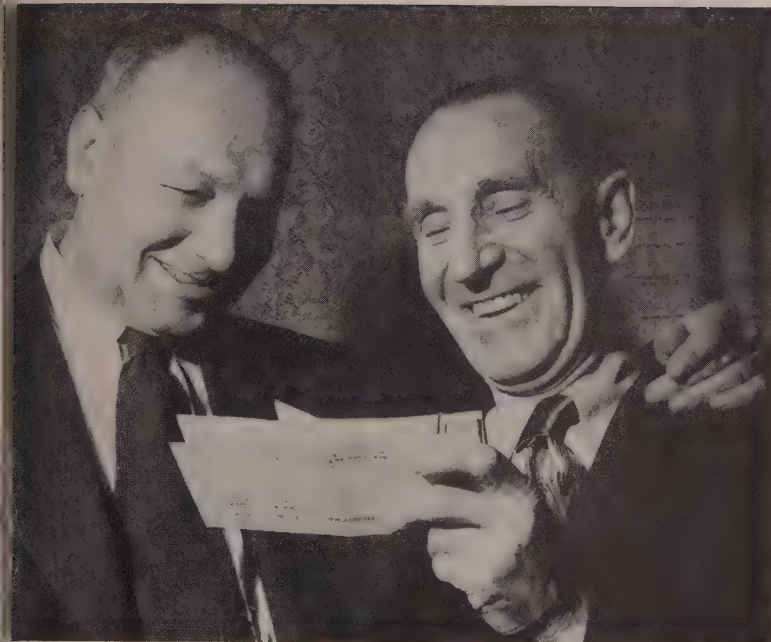
that a sound program of old age and survivor's insurance and unemployment compensation should be provided within the framework of a free economy. Extension of such programs is desirable. The objective should be to provide a minimum layer of basic protection, leaving ample room for individual thrift.

SOCIAL SECURITY

that national taxes should be levied only to cover the cost of necessary services to be performed by the national government. Taxes are improper as a means of social reform or objectives beyond the realm of essential government activities. While large revenues are essential in the position in which we find ourselves they should be sought with a minimum of braking effect on production, trade, venture capital and individual incentive.

TAXATION

Metalworking executives interviewed by STEEL voiced the above declarations of policy. While there is by no means unanimity among businessmen, the editors believe these to be a fair consensus.



For the individual and for his company . . .

Suggestion Plans Pay Off

Management and workers reap rewards as 6000 companies adopt idea-producing systems. Suggestions save time, material and expense

A MIDWESTERN manufacturer received this note in his suggestion box: "Do away with the suggestion system."

Are suggestion systems worthwhile? The answer, according to a STEEL survey on the subject: Yes, if they're run right. Proof is that about 6000 American companies operate them now. Most say they pay off in dollars and cents, but all believe they're invaluable in maintaining employee morale.

Solid Statistics—General Motors Corp. awarded \$1,516,500 to workers for helpful hints in 1951 and paid out \$1,678,000 in 1952. Some 44,890 suggestions were made by GM employees last year and 33,863 were adopted.

A Pittsburgh industrial instrument manufacturer states that his production costs have scarcely risen since 1935, when employees were first asked for suggestions. He estimates that improvements have his company about 4 per cent off its operating costs each year.

Suggestion Techniques—Methods of running a suggestion plan have come a long way since 1880 when

a Scotch shipbuilder, William Denny, is credited with starting the first system, a simple suggestion box. Lukens Steel Co., Coatesville, Pa., distributes printed suggestion forms at clock stations throughout the plant. A suggestion committee assigns a number to each proposal and considers them anonymously. Ideas are tested immediately, and employees informed of the workability of their suggestions.

A simpler plan is to persuade workers to discuss ideas for bettering production with their foreman. Frequently savings resulting from these suggestions are passed along to the individual worker. More often the entire workforce benefits from extra company profits.

Individual Status—Another technique is appealing to the worker's pride. At plants of Crucible Steel Co. of America, New York, photographs of award-winning employees are posted on bulletin boards, under the caption "Award Winner." Ford Motor Co. believes its system is unique in giving recognition and promotion consideration to white

collar and management workers as well as to hourly employees for the proposals.

Best suggestions are those which save material or labor through changes in methods. At Lukens the proposal of a jig to grind blanks, so they would meet tolerances instead of being rejected, was judged the best idea of the month. It was worth \$292 to the Lukens employee who submitted it.

Attitude—The employee's attitude governs success or failure for the suggestion plan. One manufacturer remarks, "We try to create a state of mind where the worker won't be satisfied with his technique when he can think of a better way to do his job. By so doing he helps his company and eventually helps himself." If workers aren't interested in bettering conditions of work, the suggestion project is doomed.

A New Jersey manufacturer was discouraged to find that his suggestion plan was not taken seriously by employees. Acceptable proposals were few and far between.

Workers who joke about the suggestion box would be astounded by the prompt attention their ideas receive. Edwin L. Wiegand Co., Pittsburgh, analyzes all suggestions it receives, although the company finds only 28 per cent are usable.

National Group—There is even a National Association of Suggestion Systems, in Chicago. This non-profit organization of about 700 manufacturers works to make suggestion programs more valuable to industry. Growing number of companies employing such systems is proof, it says, that such plans are paying off. The suggestion box has earned its place in industry.

Founders Hold Redesign Contest

Cash awards of up to \$500 await the winners of the fourth annual Redesign Contest announced by the Gray Iron Founders' Society Inc., Cleveland. Any person in the metalworking industry may enter by redesigning a competitive product for production in gray iron.

Entries must be submitted by May 1, 1953, and will be judged by the society's advertising committee. Awards will be made at the 25th Anniversary Meeting in St. Louis in October.

Windows of Washington

By E. C. KREUTZBERG Washington Editor

Bright business prospects for 1953 include greater outlay for industrial building. Personal income and auto production rise, Sinclair Weeks reports

THE GENERAL level of business in the first quarter of 1953 has been higher than in the closing quarter of 1952, and business leaders who comprise the membership of the Commerce department's Business Advisory Council express "solid confidence" in the business outlook, according to Secretary of Commerce Sinclair Weeks in his first press conference.

Bright Prospects—While reporting that business prospects are good, he forecast capital expenditures for new industrial plants and equipment this year at a rate somewhat higher than last year's level of \$26.5 billion (see p. 45). Personal income of Americans, he said, is at an annual rate of \$280 billion, or about \$3.5 billion over the fourth quarter rate.

Production of automobiles and trucks in the first quarter will come to about 1,850,000 units, or 560,000 more than in the first quarter of 1952.

Business Loans—What about the future of government loans to business? In answer to this question the secretary thought the Reconstruction Finance Corp. as presently functioning should be abolished, but he personally believed some sort of loan service for small business should be continued. Administration policy on this subject, he said, has not yet been fixed.

Continues T-H Study . . .

If the roster of witnesses who have appeared before the House Committee on Education and Labor to state their views on the Taft-Hartley Act is a gage, then there is not much dissatisfaction over this law—or the manner in which it will be amended—among employers.

Of approximately 60 witnesses who have appeared to date, the great majority have been officials of labor unions, interested members of Congress, former and pres-

ent members and counsel of the National Labor Relations Board.

While the national associations of employers have done a fine job to date in setting forth industry's views on Taft-Hartley, the over-all presentation could be more effective if individual manufacturers informed the committee about their particular experiences and pointed out needed amendments to the law.

Bureau for Small Business . . .

H. Res. 4090, introduced by Chairman William S. Hill (Rep., Colo.), House Small Business Committee, would create a permanent Small Business Administration. It would replace and absorb all the small business functions of the Small Defense Plants Administration, now slated to expire June 30. The bill definitely provides for government loans to small business.

Speeding Color TV . . .

Following its request to the National Production Authority to revoke immediately its ban on use of critical materials to make color TV receivers, the House Interstate and Foreign Commerce Committee has started hearings to determine what can be done to speed color television to the public.

Study Effects of Moisture . . .

Effects of moisture attacks on steel within buildings is one of the subjects to be included in a report of the Building Research Advisory Board's Committee on Condensation Control in Buildings. The report is to be completed by a subcommittee by July 1 and submitted to the full committee on Sept. 18.

The report will assemble accepted tests and standards on condensation, develop recommended practices for installation of products, and determine the priority of needed further research.



LAWS LOSE THEIR LOGIC
... vagueness confuses legislator

Laws Become Too Complex . . .

Enforcement of much federal law has become a matter of individual interpretation rather than legislative intent, says Senator William Langer (Rep., N. Dak.). This has resulted in a "mushrooming complexity of federal law, much of it obscure or antiquated and inadequate to present-day conditions."

To study this situation and outline a remedy, he appointed a general adviser to his Senate Judiciary Committee, William B. Ziff, chairman of Ziff-Davis Publishing Co. of New York and Chicago. Mr. Ziff, in addition to being a well-known author and publisher, has served as unofficial adviser on economic and foreign affairs to members of Congress.

To Strengthen Trade Policy . . .

Lewis W. Douglas, once director of the budget and former ambassador to the United Kingdom, will head a presidential committee to assist in working out a sound foreign trade and economic policy. The committee, whose members have not been determined, is to ascertain what foreign trade and mean to the United States in terms of dollars, business volume, collections and employment and raw materials and commodities must import.

Here's the difference between Hydroforming and conventional deep drawing

CONVENTIONAL METHOD

Fig. 1 shows the forming of a hemisphere with a standard draw die equipped with a die cushion. For satisfactory drawing, an accurately controlled, infinitely variable blank holding pressure during the drawing cycle is most desirable and such a feature is rarely available on conventional presses.

Conventional tooling requires that the material be drawn over a fixed die radius. A very small die radius may cause spot defects, thin-out and tearing. A very large die radius may cause wrinkles and puckers to be formed in the part.

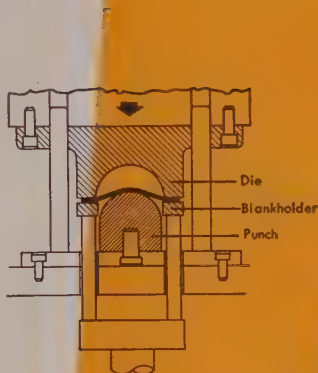


Figure 1

HYDROFORM METHOD

Note in Fig. 2 the simplicity of tooling required to produce the same hemisphere by Hydroforming.

Pressure in the forming cavity above the flexible diaphragm can be established to the setting desired. The flexible diaphragm acts as a blank holder and universal die member, applying pressure uniformly over the entire blank surface. This, in some instances, accomplishes a preliminary forming of the part. Then the punch is moved upward and proper control of the pressure in the forming cavity forms the material to the punch.

The forming cavity pressure normally increases throughout the draw, causing the forming draw radius to decrease progressively, as shown in the photo at right. This transition of the radius from large to small facilitates the "flow" of the material. Those portions of the blank which have been formed are held firmly in contact with the punch, preventing further stress or strain in those areas. The continuous wrap-around action of the flexible die member, plus the accurately controlled forming pressure, produces consistently uniform parts, free from the defects described above.

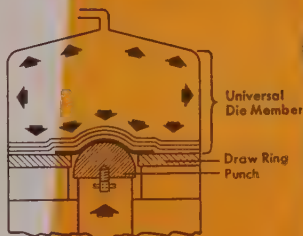
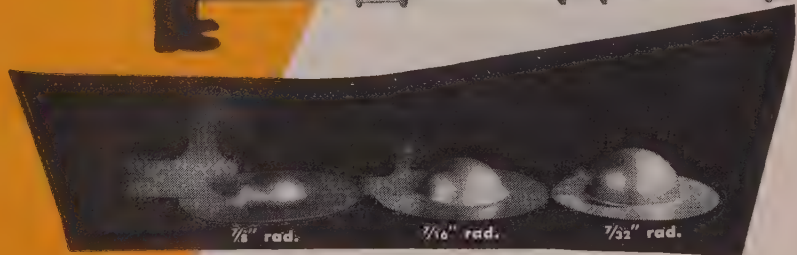
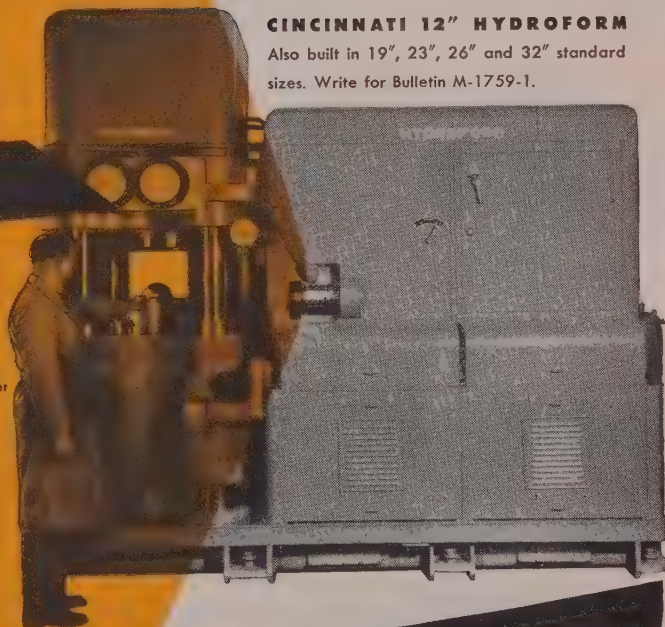


Figure 2

CINCINNATI 12" HYDROFORM

Also built in 19", 23", 26" and 32" standard sizes. Write for Bulletin M-1759-1.



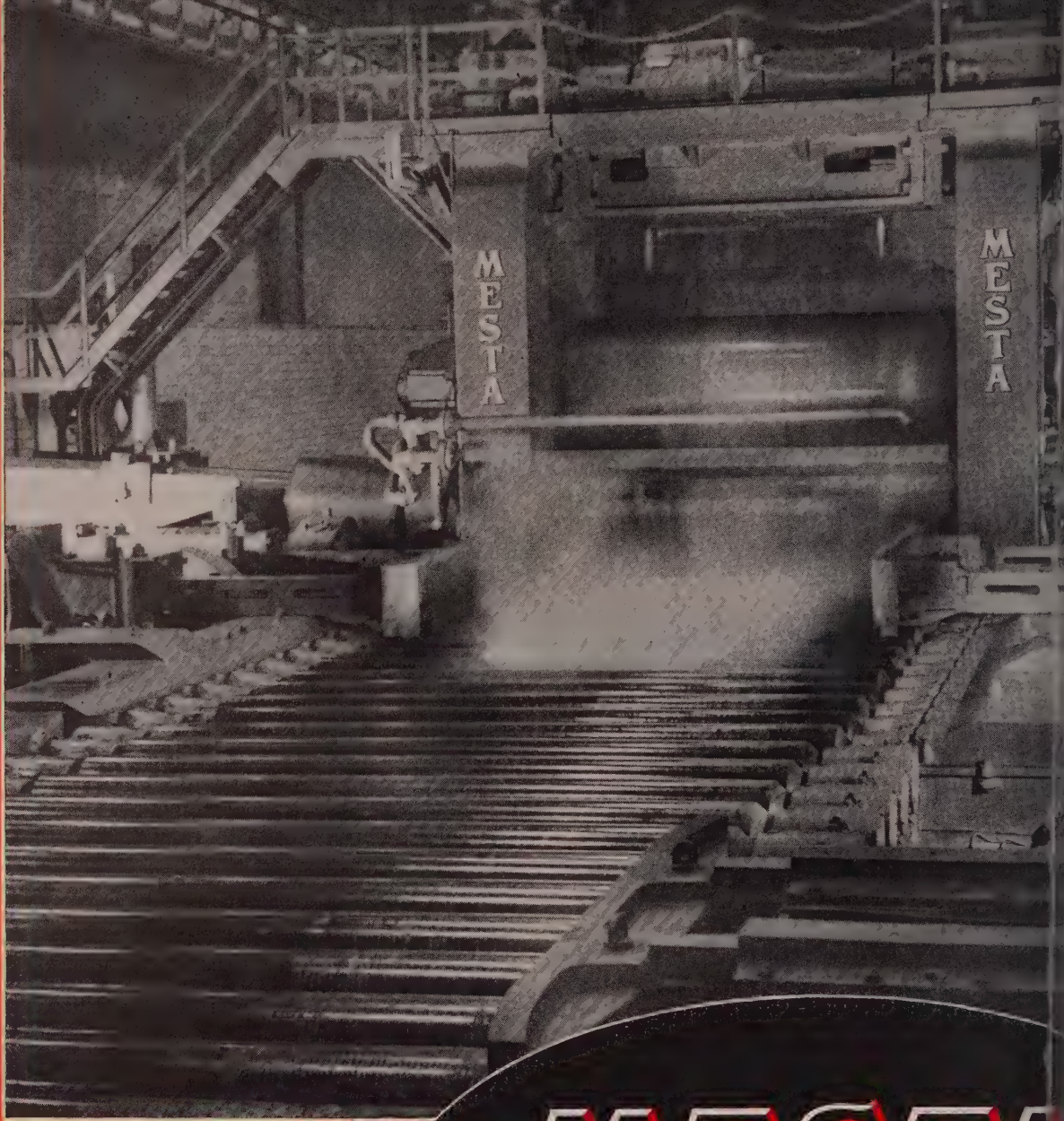
Can you convert the advantages of Hydroforming into production profits?

Through Hydroforming, deeper draws and more intricate shapes can be formed in one operation than is possible by conventional forming methods. Tool costs are reduced 50% or more. Part quality is materially improved. Short-run production is made exceptionally economical. Can you apply these Hydroforming advantages to your production? Call in a Cincinnati Milling field engineer.



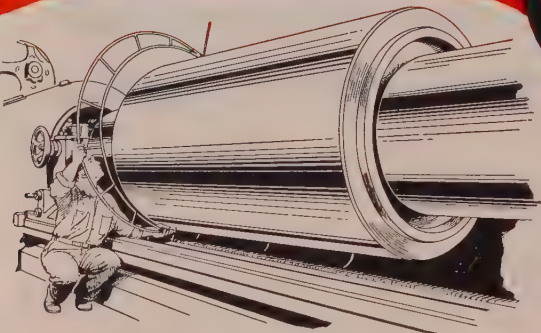
Hydroform

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U.S.A.



MESTA 160" FOUR-HIGH
REVERSING PLATE MILL

MESTA PLATE MILLS



FINISH GRINDING A LARGE MESTA BACKING-UP ROLL
IN A MESTA HEAVY DUTY ROLL GRINDER

Designers and Builders of Complete Steel Plate Mills

MESTA MACHINE COMPANY
PITTSBURGH, PENNSYLVANIA

GERMAN STEEL TRENDS

(NET TONS)

semifinished steel . . .
hot-rolled bars . . .
hot-rolled hoops . . .
sections . . .
Wire rods . . .
Rails . . .
heavy plates . . .
Medium plates . . .
thin sheets . . .

1952 IMPORTS—UP

1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
2,750	9,900	79,500	70,700
14,400	16,600	67,200	212,600
3,200	3,300	11,100	27,200
8,300	11,100	22,600	64,700
5,100	15,100	25,700	30,700
330	990	660	12,100
3,300	3,400	16,000	53,700
1,100	1,500	3,500	23,000
3,400	6,500	21,300	34,700
TOTAL	41,800	68,500	529,400

All figures are rounded.

1952 EXPORTS—DOWN

1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
6,400	3,100	9,400	1,400
101,800	86,500	84,700	62,400
16,900	13,000	12,100	8,600
60,900	50,500	39,900	41,500
41,900	28,400	17,500	14,700
30,100	27,000	32,300	30,000
55,200	40,800	33,800	33,200
14,400	9,600	5,600	4,600
60,500	36,200	23,400	15,200
TOTAL	388,200	294,900	258,830

Steel Trends Reverse in Germany

Something new: Germany has become a net-importer of steel. Even finished goods exporters are finding tougher competition. German steel producers are slowly awakening

GERMAN steel producers are jittery over the growing steel import and in that country and slipping exports (see table above).

This unprecedented situation results from a reluctance to reduce prices in Germany and price cuts in other Schuman plan countries. While not all the problems of the Schuman plan pool have been worked out, Belgium and France have been able to shade prices with the dropping of some trade barriers under the plan. France especially is making a strong effort to increase steel imports at the expense of German producers.

Slow Orders—German capital goods industries are finding tougher conditions abroad, too. Orders are being booked at about one-half to one-third below last year's rates, particularly in machinery and motor vehicles. A new surge of orders is expected from the current automobile show at Frankfurt at which Opel, German subsidiary of General Motors Corp., has displayed a new low-priced (about \$1480) car (see the photo). Another feature of the German iron and steel trade is the decline in U. S. coal imports. Only 165,300 tons of steel were produced with U. S. coal in February, 1953, about 100,000 tons less than the average during the last quarter of 1952. The same decline is noticeable in pig iron production which is depending less on U. S. coal.

Slow Shift—The shift from steel shortages to plentiful supply as a result of greatly expanded Euro-

pean capacity and effects of the Schuman plan, while slow dawning on German producers, is making itself felt now. A straw in the wind is the resumption of German export offers: Steel bars are currently being quoted at about \$86 f.o.b. for export, nearly \$10 below German inland quotations.

More price reductions can be expected after May 1, the deadline for the uniform iron and steel market of Montanunion.

Off-Shore Pickups

The House of Commons voted

304 to 271 to denationalize the British steel industry. Now the bill goes to the House of Lords, where the heavy Conservative majority assures easy passage. . . Three electric pig iron smelting furnaces will be ready to start production by the end of 1953 at Norway's Mo i Rana steel works. Electric steel-producing furnaces are being installed at the plant which are expected to begin operations in the summer of 1954. . . The French General Wireless Co. has registered a new company, Precision Ceramics Inc., at Bedford, Mass., in association with Aerovox Co. for the manufacture of condensers and electronic spare parts. . . French steel exports increased from 121,000 tons in December, 1952, to 182,000 tons in January, 1953. Total steel sales were 683,000 tons in January.



The Opel plant at Russelheim, Germany, a General Motors subsidiary, unveiled a surprise car for the International Auto Show in Frankfurt. It's the "Olympia Rekord," with a 40 hp engine and a top speed of about 70 miles per hour

United Press

Specify



BUMPER FACE-BAR

for

High Strength and Impact Resistance with Excellent Cold-Formability

N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than can mild carbon steel.

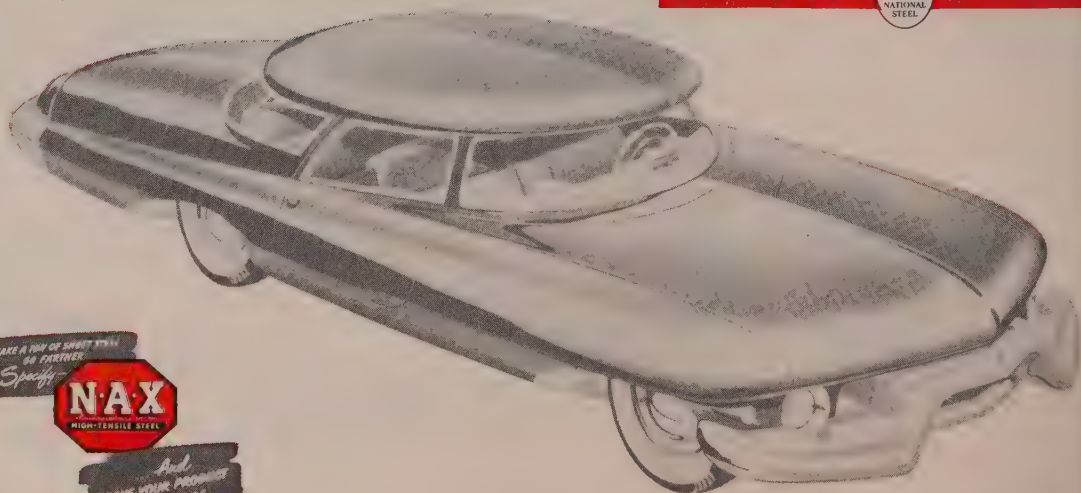
Your product can be made lighter in weight . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division

Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION



MAKE A TON OF SHEET STEEL
GO FARTHER
Specify



And
"MAKE YOUR PRODUCTS
LAST LONGER"

KEEP YOUR **SCRAP** MOVING TO YOUR DEALER

Mirrors of Motordom



Changes are coming on the Chevrolet-Flint line because . . .

By 1956, production of six-cylinder automobile engines will be a shadow of its former self as the overhead valve V-8 takes over. Even K-F and Hudson may be in the show

DETROIT

BY 1956, Chevrolet, Ford, Mercury, Packard, Pontiac and Plymouth will offer overhead valve V-8 engines. Only Willys, Kaiser and Hudson appear to be lagging the V-8 push and the betting is dollars to bankruptcy they'll be getting into line.

Though the Hudson Six as modified for stock car racing (or police use) puts out over 190 horsepower, many in the trade feel the Hornets will have to get that V-8 stinger if they're to maintain their stock car racing superiority. If it takes two engines per car, Hudson is going to stay in front. So the racing forms hold the key to Hudson engineering and chances are good there will be a Hudson V-8 by 1956 post time.

Everybody in the Act—Kaiser, though quiet on the subject, is not likely to lag behind. When the firm completes its purchase of Willys as appears virtually certain, every

auto firm will be offering an overhead V-8 in some of its models by 1956.

This prospect is of neck-snapping interest to metalworking men in more ways than acceleration, for the key to the new V-8 engine craze is tooling.

It's no secret that Mercury first planned to have its ohv V-8 in the dummy air scoop special of two years ago. Now it looks curbside by October. So firms like Packard, still trying to decide between four V-8s now whizzing around its Utica, Mich., test track, are going to have to get things in the works pretty fast now or eat dust.

Here's Why — The reason is simply this: Automotive tool building firms in the Detroit area are up against the biggest order backlogs in many years. Ex-Cell-O Corp., builder of transfer machines, reports that from engineering to plant for the average piece of equipment takes about 18 months.

Other builders report backlogs for smaller pieces of equipment in the 20-30 week bracket, heavy items run from 40 weeks on up. All say they see heavy business for at least the next two years, and all report the auto companies are snapping at their heels daily.

Chevrolet is a good example. Its new V-8 engine plant is closed in at the Flint construction site and the firm has moved up production plans to 1954 as reported in this column some weeks ago rather than 1955. That spells pilot model production by midyear if tooling doesn't stand in the way. Consequently, tool suppliers involved are being pushed for assurances that Chevrolet won't have an empty air scoop in 1954.

At least enough V-8s to fill the Bel Air series engine cavities seem assured, probably as optional equipment.

More Coming Up—Such firms as Buick and Dodge are ordering more tooling to up V-8 engine production, and that adds heavily to the order backlog. Equipment to build more and better automatic transmissions is being ordered by the automakers as well, along with power steering, etc. The toolmakers love it, but they do wish it would be stretched out a bit.

A big reason it can't is the way an automaker tools for a new engine. Take Chevrolet, once again. Currently the firm is making its overhead-six at Flint. The milling, boring, drilling, tapping and lapping machines are lined up in batteries. Roller conveyors pass the blocks to an empty machine performing the operation required. The setup makes six-cylinder engine blocks like a hot skillet turns out popcorn. It is difficult for the layman or Chevrolet engineers to visualize it doing anything else.

Expensive Proposition—As a result, when Chevrolet starts V-8 production, it will start with a brand new layout in its new building at Flint. Revamping the existing facilities would be a costly and impractical proposition, and that's a factor in why Chevrolet's six has

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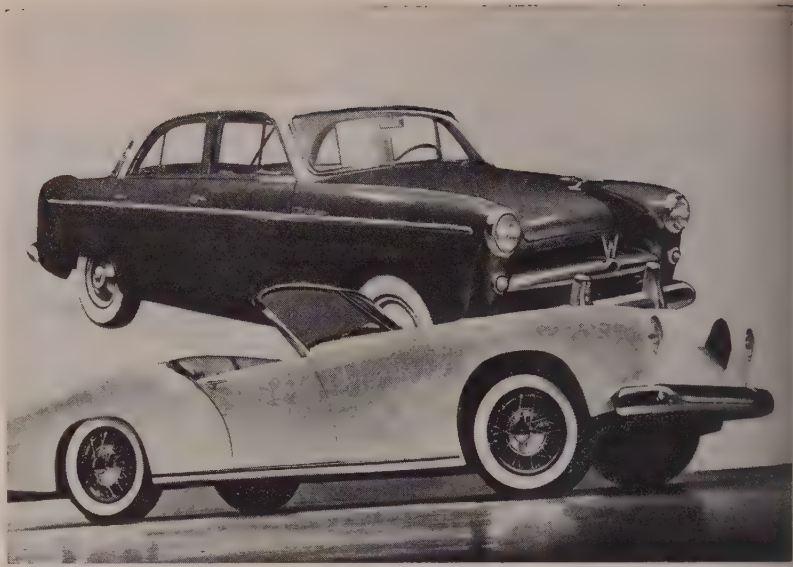
remained basically unchanged since the date it was introduced. When it switched from the four cylinder job to the six about 1929, Chevrolet started from scratch, too. Changes in the number of cylinders and style of block require all new equipment and production can't be stopped for the changeover. Automakers estimate they don't even get their tool and die changes paid for until a model has been in production six months.

Equipment to produce the new Chevrolet V-8 will undoubtedly make the automation headlines. Known to be involved is a pedestal-type motor assembly conveyor which transcends the wooden-block conveyor thinking now used in the six. Automation in the transfer machines doing the block machining is bound to run high and will embody the unwritten Chevrolet theme of utilizing principles that are proven.

Tried and Proven—A week spent driving a Chevrolet "210" series sedan leads to this evaluation of the firm. Chevrolet adopts features as they are proven and accepted, is extremely careful not to go out on a limb mechanically or stylewise. Pickup with the Power Glide unit usually doesn't put you away from a traffic light first. On the other hand, you're seldom last either. At speeds above 65 miles an hour the car gives an uneasy sensation of floating like most light cars, but in the normal driving ranges of 50-60 the car handles beautifully and holds plenty in reserve. Interiors belie the Chevrolet price tag and riding qualities are surprisingly good.

Particularly impressive in the manufacture was the engine assembly. Pistons are weighed and sized prior to fitting to air gaged cylinders by hand. Connecting rods are sorted by weight and when the engine is assembled it is run in for about half an hour with an electric motor while flushed with oil to remove loose metal particles.

Thorough—Then the engine is disassembled and all bearing surfaces are inspected. Finally the engine is reassembled and run under its own power for another half an hour or longer. This technique is probably not unique to Chevrolet, but insures lasting quality in these low-priced engines.



Willys and Kaiser models pose together as . . .

Kaiser-Frazer Purchase of W-O Appears Certain

Billed in the rumor mart for weeks as a "merger," the K-F and Willys deal now turns out to be a purchase by Kaiser-Frazer Mfg. Corp. of Willys-Overland Motors Inc. Price is estimated at \$62.3 million, which includes the assumption of certain liabilities of Willys.

The new corporation is expected to be known as Willys Motors Corp. Ward M. Canaday, president and chairman of Willys-Overland, has

been invited to become president and chairman of the new firm. It is expected that R. R. Rausch will become executive vice president.

Benefits expected from the plan include mutual purchasing, better utilization of tools and equipment and savings in tools and overhead. Facilities of the two firms complement each other to an unusual degree. Willys forging will definitely prove a boon to Kaiser, while the body shop of Kaiser will do likewise to Willys.

Consolidated balance sheet of K-F with the purchase shows total assets exceeding \$200 million and working capital in excess of \$60 million. This funding places the infant in fourth place moneywise though production will have to earn the firm the spot on the market. Sales will still be handled independently through existing organizations, and a consolidated auto line one of these days seems a logical assumption, though nothing has been announced on the subject. W-O stockholders are expected to approve the purchase Apr. 24.

Auto, Truck Output		
U. S. and Canada		
	1953	1952
January	612,829	424,559
February	623,530*	464,557
March		525,024
April		570,464
May		542,559
June		542,478
July		226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509
Week Ended	1953	1952
Feb. 21	161,860	110,542
Feb. 28	167,779	118,397
Mar. 7	158,825	115,126
Mar. 14	165,762	120,392
Mar. 21	169,128	125,347
Mar. 28	170,000*	132,850

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Exhaust Notes

The Mercury ohv V-8 to be introduced around October will produce 145 hp. Also embodied in the new models will be a strikingly lower hood line made possible by the lower overall engine height.

From the experience of building

NEARLY 8,000,000
Maytag WASHERS

get the most
for your
Zinc
Die Casting
Dollar!



In building nearly 8 million washers since 1907, The Maytag Company has always maintained dependability through top quality. The Maytag Master model of the wringer-type machine, first built in 1939, has always utilized ZINC Die Cast operating components and those in the current model typify the advantages of this metal and method of production.

ECONOMICAL, TROUBLE-FREE ASSEMBLY
Examine these six ZINC Die Castings from the standpoint of complexity of shape and you will realize why, by any other means of manufacture, a greater number of parts would be required to serve the same purpose. An absolute minimum of machining is required to prepare these castings for

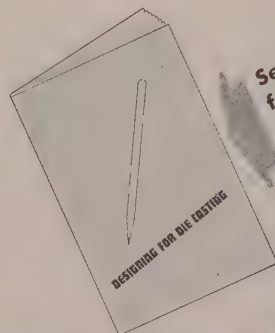
assembly and their dimensional accuracy assures perfect fit every time.

STRENGTH AND BEAUTY

The unusual castability of ZINC Alloy permits section thickness to be varied in proportion to the stresses imposed. Thus, these castings are thick only at vital points, to provide maximum strength with a minimum amount of metal. From an appearance standpoint, the smooth as-cast surfaces of the ZINC Die Castings are economically finished with a beautiful baked white enamel.

In selecting a die casting alloy there are many factors—both physical and mechanical—to be considered in addition to the base price of the metal. Ask any commercial die caster about

the advantages of ZINC Die Castings—or write to us.



ZINC
FOR DIE CASTING ALLOYS

The New Jersey Zinc Company, 160 Front St., New York 38, N. Y.

The Research was done, the Alloys were developed, and most Die Castings are based on
HORSE HEAD SPECIAL (99.99 + %) ZINC
Uniform Quality



"Our railroad bridge is an

EYE OPENER

for anybody with an assembly problem"

"Whether you're assembling toasters or bridges," Ken went on, "it pays to set your sights on fasteners."

"Fasteners?" asked Jack.

"Right!" affirmed Ken. "We've saved plenty by taking the RB&W man's advice to switch from rivets to high strength RB&W bolts in assembling high stressed structural joints.

"These bolts stay tight and that saves us maintenance. They assemble faster, and that saves us labor and construction time."

There's a cost-cutting lesson for you in this story, whatever your industry.* So look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient

than the fasteners you're now using.** Or you may save by the stepped-up production you get from using the finest fasteners...RB&W bolts, nuts, rivets and screws of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

RB&W—The Complete Quality Line. Plants at: Port Chester, N.Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents: Portland, Seattle. Distributors from coast to coast.

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BOLT & NUT COMPANY

RB & W

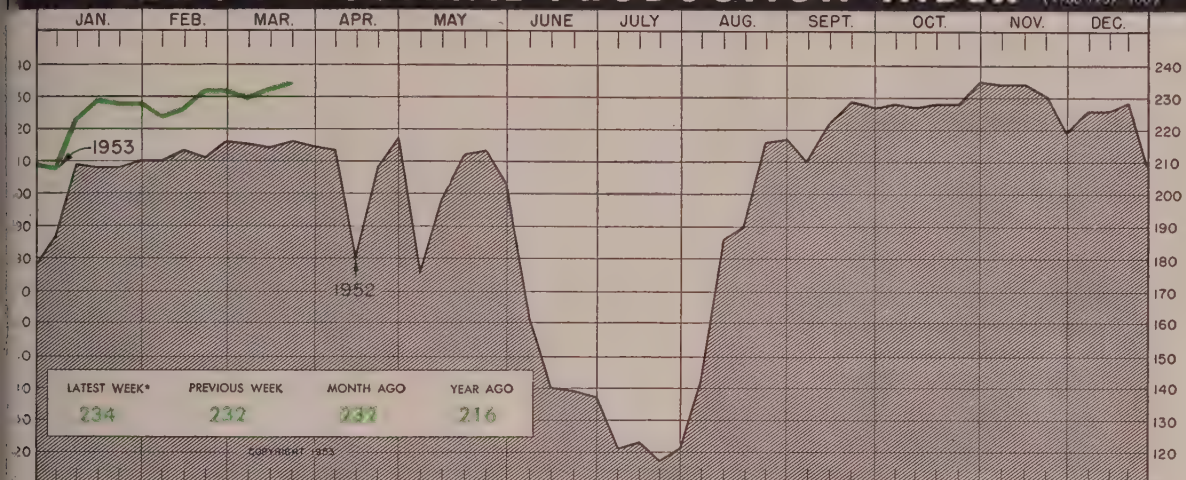
108 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

*If you're interested in construction, write RB & W at Port Chester for the free booklet, "High-Strength Bolts."

**New SPIN-LOCK Catalog is in the Product Design File. Write for extra copies.

The Business Trend

STEEL'S INDUSTRIAL PRODUCTION INDEX (1936-1939=100)



Week ended Mar. 21

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

The consumer durables industry is watching like a hawk today's high consumer demand. Many promotion techniques are used to smoke out civilian dollars. Index edges up

METALWORKING companies turning out consumer goods might well wonder how long the public will under its purchases at today's high levels. Fact is, any slight dip in the demand for metal consumer products is certain to slow many production lines.

Here's why: The metalworking industry after the steel strike bent every effort to restore depleted inventories. When this was accomplished, strong consumer demand applied the boost to industrial production as defense orders leveled off. The Commerce department says that retailers in February edged up a \$12.5 billion sales volume, the highest monthly total in history. All retail sales in February rose 7 per cent over the year, while sales of durables jumped 14 per cent above February, 1952, to \$4 billion.

Range Sales Hot — Enjoying a considerable boom in sales are manufacturers of household durables. The National Electrical Manufacturers Association says that factories in January sold 108,145 household electric ranges, or 34 per cent over unit-sales in January, 1952. Refrigerator sales in the first month in 1953 totaled 325,186

units, about 24 per cent over a year earlier.

Indications are that sales of heavy appliances are still well above this time, a year ago. The University of Michigan's Survey Research Center—working for the Federal Reserve Board—says that most persons believe that now is a good time to buy a new refrigerator, range or dishwasher. The research center in past years has had considerable success in gauging market demand. Manufacturers and retailers are at present busy fostering this favorable public attitude.

Many Promotions—Newspapers, radio and TV programs are brimming with promotional techniques calculated to smoke out more consumer dollars. To lure buyers for freezers, food is being offered at wholesale prices to those people, extra large screens go to purchasers of TV sets and practically everybody is offering the lowest installment credit terms in many years. Nevertheless, consumer demand is tricky; only the next few months will tell whether this renewed emphasis on sales will keep output at near-record levels.

Index Rising—As consumer pro-

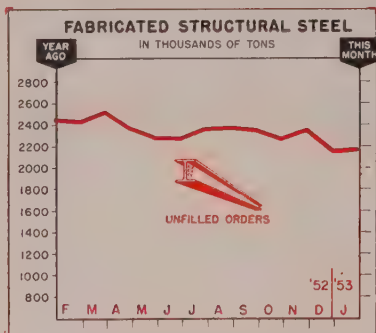
duction booms and defense demand remains high, most indicators of industrial activity are at record or near-record levels. STEEL's production index in the week ended Mar. 21 rose 2 points to 234 per cent of the 1936-1939 average. Steel and automotive operations continued to move upward, and electricity production remained about 9 per cent over the comparable 1952 week. Only freight car loadings in the week ended Mar. 21 lagged under the same period in 1952.

Steel Production Surging . . .

Steel production is breaking previous records nearly every week. The American Iron & Steel Institute says that furnaces in the week ended Mar. 21 poured 2,288,000 net tons of steel for ingots and castings. That's the third consecutive week that previous output records were broken. Estimated for the week ended Mar. 28 is a steel turn-out of 2,259,000 net tons.

Auto Goals Raised . . .

The passenger car industry, challenged by strong demand, is striving to roll out as many vehicles as possible. Total output in the first three months of 1953 will reach 1.5 million passenger autos, *Ward's Automotive Reports* estimates. Predicted for the April-June period



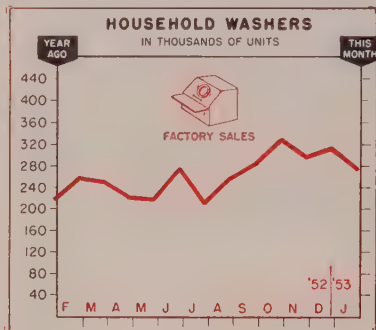
Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlogs	
	1953	1952	1953	1952
Jan.	234.2	244.9	2,180	2,416
Feb.	246.4	...	2,408
Mar.	268.8	...	2,501
Apr.	230.7	...	2,350
May	244.2	...	2,263
June	125.5	...	2,261
July	138.3	...	2,361
Aug.	226.3	...	2,363
Sept.	227.6	...	2,342
Oct.	261.7	...	2,266
Nov.	222.6	...	2,357
Dec.	225.2	...	2,153

Total ... 2,664.3

American Institute of Steel Construction



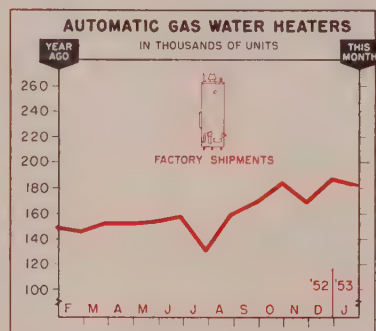
Household Washers

Sales Billed—Units

	1953	1952	1951
Jan.	277,309	213,998	321,092
Feb.	255,864	341,328
Mar.	248,431	368,455
Apr.	217,211	292,193
May	213,668	253,942
June	274,457	253,119
July	207,593	139,799
Aug.	254,537	239,081
Sept.	252,732	313,756
Oct.	327,514	297,210
Nov.	293,079	262,484
Dec.	310,661	218,664

Totals ... 3,101,045 3,301,123

American Home Laundry Mfrs. Assn.



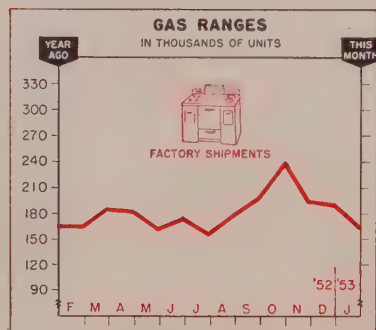
Automatic Gas Water Heaters

Shipments in Units

	1953	1952	1951
Jan.	183,100	148,700	225,600
Feb.	145,800	213,400
Mar.	153,300	223,300
Apr.	153,300	199,400
May	159,300	187,400
June	159,000	131,500
July	131,300	102,400
Aug.	161,500	124,400
Sept.	171,200	130,900
Oct.	185,300	148,800
Nov.	167,100	143,400
Dec.	188,200	127,200

Total ... 1,920,000 1,937,700

Gas Appliance Mfrs. Assn.



Gas Ranges

Shipments in Units

	1953	1952	1951
Jan.	166,900	166,100	260,600
Feb.	166,200	254,000
Mar.	185,200	289,800
Apr.	182,300	225,000
May	162,800	177,800
June	175,700	128,500
July	154,200	116,400
Aug.	178,600	168,100
Sept.	199,600	183,600
Oct.	239,700	210,900
Nov.	186,400	192,200
Dec.	190,600	149,500

Total ... 2,187,400 2,356,400

Gas Appliance Mfrs. Assn.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Feb. 23	Gray Iron Castings..Mar. 16	Radio, TV .....Feb. 2
Durable Goods .....Mar. 9	Ironers .....Mar. 9	Ranges, Elec. ....Feb. 2
Employ., Metalwks. Jan. 18	Indus. Production..Feb. 16	Refrigerators ....Feb. 2
Employ., Steel .....Dec. 15	Machine Tools ....Mar. 23	Steel Castings ....Mar. 16
Foundry Equip. ....Mar. 23	Malleable Castings..Mar. 16	Steel Forgings ....Mar. 16
Freight Cars .....Mar. 23	Prices, Consumer..Jan. 26	Steel Shipments ...Nov. 3
Furnaces, Indus. ....Feb. 2	Prices, Wholesale..Jan. 26	Vacuum Cleaners...Mar. 23
Gear Sales .....Mar. 9	Pumps .....Feb. 16	Wages, Metalwks. Mar. 9

are an additional 1.8 million units bringing the first-half total to around 3.3 million passenger cars or the second largest half-year production in motordom's history. Only the 3.5 million autos produced in the second half of 1950 surpasses this projected turnout.

The big question-mark hovering over the automotive scene is the steel situation. Steel in hot-rolled and cold-rolled sheets and bar stock is fist-tight and could curtail production at a point well under the industry goal. Yet trade circles according to *Ward's*, foresee a brighter steel picture with new mills and increased steelmaking facilities lessening the shortages. Automakers at present are scurrying for every available pound of metal they can find, and, in some instances, production lines have been halted due to lack of steel.

Most assembly lines, however, are running at near full-tilt. U. S. and Canadian plants in the week ended Mar. 21 completed 169,123 passenger cars and trucks. No since March, 1951, has this output level been surpassed. Combined U. S.-Canadian production in the week ended Mar. 28, estimates STEEL, totaled 170,000 passenger autos and trucks.

Employment Pushes Up ...

As industry's pace quickens, employment continues on an upward path, with the number of jobs at unusually low levels. The Bureau of the Census says that employment in mid-February rose 400,000 above the January level to 60.9 million, compared with 59.1 million persons employed in February, 1942. Nonagricultural employment last month increased 500,000 persons to 55.6 million workers, the highest monthly total on record and exceeding that of a year earlier by 1.9 million employees. Manpower continued in short supply in February with only 1.8 million persons, or 2.9 per cent of the total workforce, looking for jobs.

TV Shipments Heavy ...

With demand at near-record levels, manufacturers are rushing to sets to dealers as quickly as possible. Radio-Television Manufacturers Association says that dealers in January received 695,0

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity) ²	101.0	101.5	100.5
Electric Power Distributed (million kwhr).....	8,100 ¹	8,138	7,354
Bituminous Coal Output (daily av.—1000 tons)	1,404	1,350	1,623
Petroleum Production (daily av.—1000 bbl).....	6,530 ¹	6,550	6,423
Construction Volume (ENR—millions).....	\$312.1	\$266.2	\$250.8
Automobile, Truck Output (Ward's—units).....	169,128	165,762	125,247
TRADE			
Freight Car Loadings (unit—1000 cars).....	705 ¹	700	720
Business Failures (Dun & Bradstreet, number)	160	165	181
Currency in Circulation (millions) ³	\$29,708	\$29,780	\$28,361
Dept. Store Sales (changes from year ago) ³	+11%	+9%	-10%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)...	\$19,450	\$16,551	\$19,568
Federal Gross Debt (billions).....	\$265.2	\$267.5	\$258.9
Bond Volume, NYSE (millions).....	\$15.9	\$17.1	\$12.7
Stocks Sales, NYSE (thousands of shares).....	9,552	8,537	6,356
Loans and Investments (billions) ⁴	\$77.8	\$77.5	\$73.6
United States Gov't. Obligations Held (billions) ⁴	\$31.3	\$31.3	\$31.9
PRICES			
STEEL's Weighted Finished Steel Price Index ⁵	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index ⁶	225.1	225.1	243.6
All Commodities ⁷	110.2	109.9	112.5
All Commodities Other Than Farm and Foods ⁷	113.4	113.3	114.2

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

its, or 87 per cent more than the 1,689 sets obtained in January, 1952.

Suggesting that the industry may have a long way to go before it saturates the market for sets, the Federal Communications Commission announces that it has K'd 313 grants since last May for construction of new TV sending stations.

Bank Clearings Jump ...

As the nation's output reaches upward, dollars changing hands in leading industrial cities are moving at a furious pace. Bank clearings in 25 leading cities in the week ended Mar. 18 totaled \$19.5 billion, about 0.6 per cent over the comparable week in 1952. Yet significant advances over last year were made in the heavily industrialized communities. Clearings that week increased over the year by 20.3 per cent in Detroit, 19 per cent in Baltimore, 14.4 per cent in Cincinnati and 13.4 per cent in Cleveland.

Electricity Output High ...

Electricity production, a good indicator of industrial velocity, is standing high above output a year ago, despite mild weather in 1953. The Edison Electric Institute says that the weekly turnout of electricity in February loomed about 9.3

per cent over the comparable weeks in 1952. Further over-the-year advances may be in the cards this spring; power output in the week ended Mar. 14 totaled 8.1 billion kilowatt-hours, or 9.8 per cent over the week ended Mar. 15, 1952.

Business Failures Increase ...

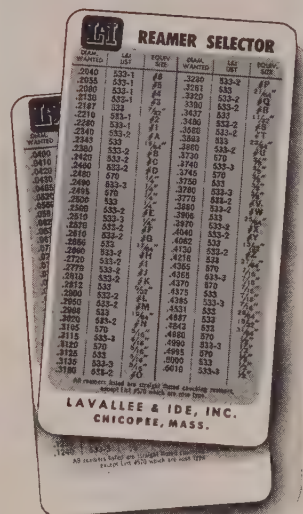
Casting a shadow on the otherwise bright industrial picture is the increase in business failures. Failures rose 7 per cent in February to 691 enterprises, the heaviest toll in ten months, reports Dun & Bradstreet Inc.

Liabilities involved in February's failures climbed 17 per cent over the month to \$27.3 million, the largest volume since October.

Trends Fore and Aft ...

Wholesale prices in the week ended Mar. 18. inched upward for the first time in many weeks as prices of both farm products and metals increased ... The population of the U. S. increased 2.7 million to 158,657,000 persons in the year ended Feb. 1 ... Railroads in the future will own 70-foot flatcars carrying truck-trailers to facilitate deliveries, predicts L. K. Silcox, vice chairman of New York Air Brake Co. ... Market production of natural gas in 1952 was 7 per cent greater than in 1951.

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2 DUAL-PURPOSE OILS (lubrication and cutting)

SUNICUT 11-S for medium duty on automatic screw machines

SUNICUT 209-S for heavy duty on automatic screw machines

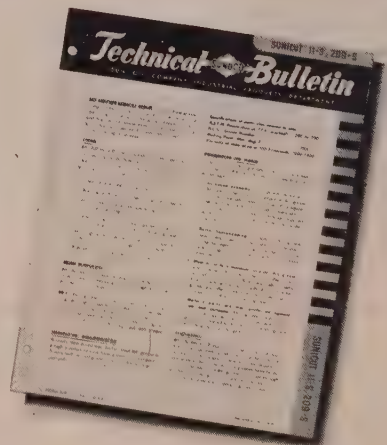
2 SINGLE-PURPOSE OILS (cutting only)

SUNICUT 102-S for heavy duty on automatic screw machines

SUNICUT 110-S for heavy duty service in broaching, threading, gear cutting, heading and similar applications

All four oils keep parts and tools cooler, help maintain closer work tolerances, permit longer runs between tool dressings. All are odorless and light in color. In addition, Sunicut 11-S and 209-S have high lubricating value and are nonstaining.

For your copies of the technical bulletins describing these new oils, call the nearest Sun office or write **SUN OIL COMPANY**, Philadelphia 3, Pa., Dept. S-3.



**INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY**

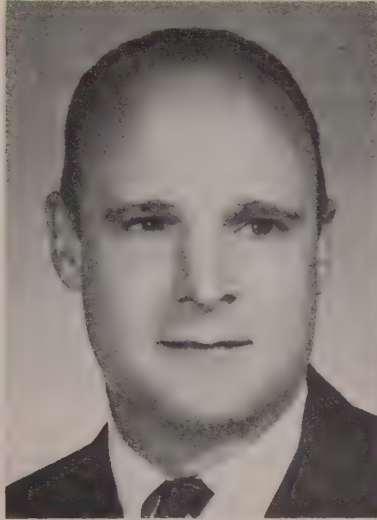


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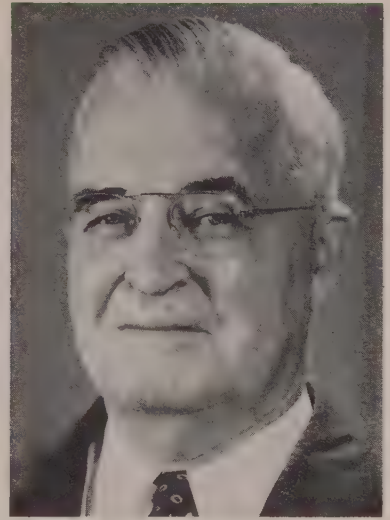
Men of Industry



H. BRUCE RASMUSSEN
... Miller Motor sales manager



ALBERT B. DISS
... Watson-Stillman v. p.-gen. mgr.



MYRON S. CURTIS
... Warner & Swasey engineering v. p.

Miller Motor Co., Chicago, announces the following changes and additions to its sales staff: **H. Bruce Rasmussen** becomes sales manager in charge of its coast-to-coast sales organization. He formerly was with Baker Chemical Co. New factory salesmen include **Jack Frink** and **John Vaas** in the Chicago area; **Stephen Stiles** in the Detroit area; and **Roger Lawson** in the Cleveland-Akron-Youngstown area.

R. G. LeTourneau Inc., Peoria, Ill., appointed **John W. Schoen** vice president and general sales manager. Starting Apr. 15 he will direct the sales division as well as other related departments. He replaces **R. E. McCluskey**, resigned. Mr. Schoen had been vice president-sales with LaPlante Choate Co. When that company was acquired early this year by Allis-Chalmers Mfg. Co., Mr. Schoen resigned to become consultant for David Brown Industries.

Karl Goetz was made manager, San Francisco branch, **Kurt Orban Co.** He formerly was with Friden Calculating Machine Co. Inc.

Albert Steg becomes controller of **Borg-Warner Corp.**, Chicago. His resignation from his present position as controller of American Optical Co. becomes effective Mar. 31.

Albert B. Diss was appointed vice president and general manager, **Watson-Stillman Co.**, division of **H. K. Porter Co. Inc.**, Roselle, N. J. In his new position Mr. Diss will be in charge of all manufacturing and sales operations. He was formerly vice president-manufacturing.

M. Merle Harrod was elected president of **Wapakoneta Machine Co.**, Wapakoneta, O. He succeeds the late **Carl D. Fischer Jr.** Mr. Harrod was formerly vice president. He has been with the firm 17 years.



M. MERLE HARROD
... president of Wapakoneta Machine Co.

Myron S. Curtis, for the last four and half years director of engineering of **Warner & Swasey Co.**, Cleveland, was elected engineering vice president.

American Steel & Wire Division, U. S. Steel Corp., appointed **Richard R. Snow** assistant to vice president-operations at Cleveland, and **John P. Debri** as general superintendent of its Joliet, Ill., plant. Mr. Debri succeeds Mr. Snow, who leaves his Joliet post to succeed **Burton H. Gedge**, retired.

W. F. Huntley was named superintendent of the blast furnace department, Aliquippa, Pa., Works, **Jones & Laughlin Steel Corp.** He succeeds **Elmer H. Riddle**, retired. **A. T. Sadler Jr.** succeeds Mr. Huntley as assistant superintendent. **Si Feigenbaum** was named works metallurgist, Pittsburgh Works Division, succeeding **S. C. Faddis**, transferred to the Cleveland Works Division as assistant works manager to succeed **J. M. McColloch**, retired. **K. S. Loofboro** was named superintendent of blast furnaces, coke works and dock at the Cleveland Works.

Dr. Grayson Kirk, president of Columbia University, was elected to the board of directors of **International Business Machines Corp.**, New York, filling a vacancy caused

by the death of **Augustine L. Humes**.

William F. Alexander becomes assistant manger, procurement department, **Koppers Co. Inc.**, Pittsburgh. Since 1948 he has been responsible for purchasing of materials for coke oven and steel plant construction projects of Koppers' engineering and construction division throughout the Western Hemisphere.

Emil Holzwart was elected vice president-production, **General Box Co.**, Des Plaines, Ill.

J. T. Tucker was appointed general manager in charge of oil equipment sales for **Emsco Derrick & Equipment Co.**, Los Angeles. He will handle responsibilities of **Paul Courtney** who resigned as vice president of the company.

At the switchgear division of **Westinghouse Electric Corp.**, Pittsburgh, **Maurice H. Hogg** was appointed assistant manager, **Charles P. West** manager of engineering and **Charles E. Bickham** manager of order service.

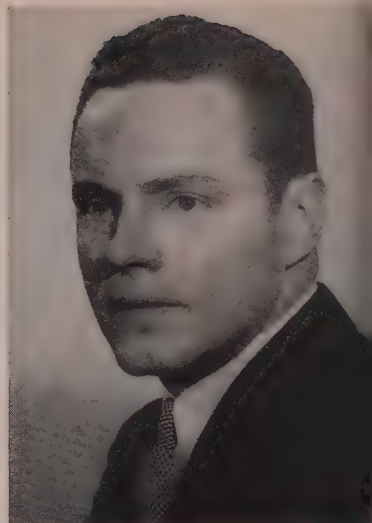
At **Stamco Inc.**, New Bremen, O., **James R. Cummings** was made director of engineering and sales, and **William Bailey III** is now in sales and service. Before joining Stamco, Mr. Cummings was with **Reynolds Metals Co.** in Richmond, Va., and **Tennessee Coal, Iron & Railroad Division**, U. S. Steel Corp. Mr. Bailey joined Stamco in 1950.



JAMES R. CUMMINGS



MAX M. MULLER



HARVEY N. BARRETT JR.

... vice presidents of **Basic Refractories Inc.**

Basic Refractories Inc., Cleveland, elected two vice presidents: **Max M. Muller** will direct operations and engineering and **Harvey N. Barrett Jr.** will be in charge of sales activities.

Gerry T. Attridge, general manager, **Lovejoy Tool Co.**, Springfield, Vt., was elected vice president.

Richard A. Smith was elected to succeed his father, the late **Irving R. Smith**, as president of **Sterling Wheelbarrow Co.**, Milwaukee. The new president was formerly vice president of the firm. **Harold E. Smith**, brother of Irving, and president of **T. L. Smith Co.**, was elected

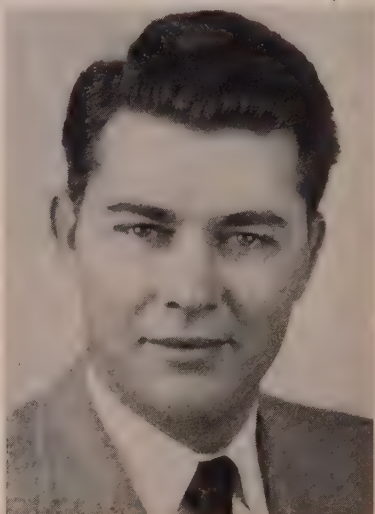
vice president of **Sterling**. **Martin A. Dooley**, cashier, was elected treasurer.

J. C. Woods was appointed division sales manager and **C. J. Stubble** division tubular manager of the eastern division of **National Supply Co.** Both have served as assistant managers of that division since 1950. Mr. Woods continues headquarters at Toledo, O., and in addition will handle sales activities in Chicago, St. Louis, Findlay, O., and Cleveland pending reallocation of those responsibilities. Mr. Stubble continues headquarters in Pittsburgh where additional responsibilities include supervision of sales of wheel head equipment manufactured by the company's Houston plant.

E. A. Longenecker, formerly president of **LeRoi Co.**, Milwaukee, and **Lauson Co.**, New Holstein, Wis., and more recently associated with **Jacobsen Mfg. Co.** at Racine, Wis., was elected president of **Yard-Man Inc.**, Jackson Mich., manufacturer of hand and power lawn mowers.

Hiram Swank's Sons, Johnstown, Pa., appointed **B. A. Rhine** director of sales, **W. K. Sworb** assistant director of sales, and **C. Ferguson**. **Swank** also an assistant of sales. Mr. Rhine succeeds **H. E. Townsend** retired. Mr. Swank transferred from Cleveland to Johnstown.

After 47 years of service, **Judson H. Mansfield** has retired from **Greenlee Bros. & Co.**, Rockford, Ill. He is succeeded by **Joel A. Jar**

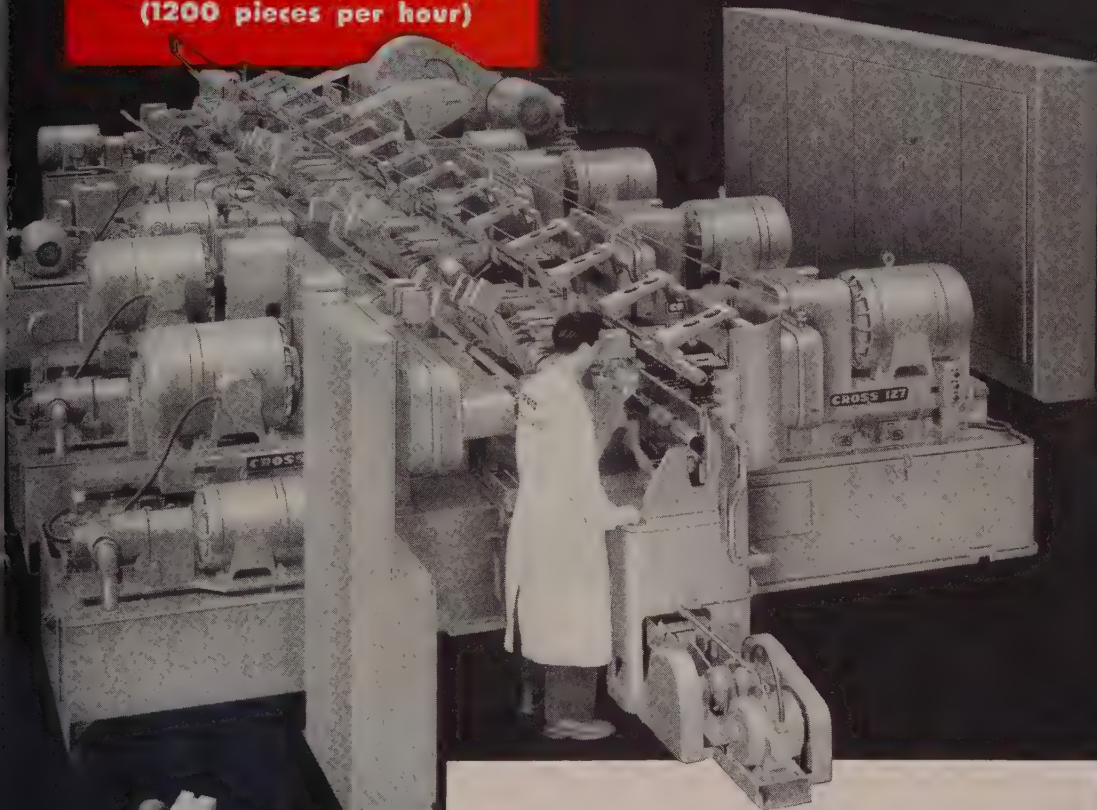


WILLIAM BAILEY III

... new appointments at **Stamco Inc.**

**Mills, Drills,
Spotfaces
and Taps
Bearing Blocks**
(1200 pieces per hour)

Another Transfer-matic by Cross



- ★ Drills and spotfaces stud holes; drills angular oil hole; drills and taps two screw holes; mills bearing lock slots; and saws into five individual pieces.
- ★ 240 bearing block sets (1200 pieces) per hour at 100% efficiency.
- ★ Capacity for machining two sets of parts at a time.
- ★ Two heavy-duty, 25 hp, vee belt drive, milling spindles for sawing operations.
- ★ Other features: Built-in chip conveyor, automatic lubrication, overhead transfer mechanism, gravity operated cam clamping for work holding fixtures, J.I.C. hydraulic and electrical construction.

Established 1898

THE **CROSS** CO.
DETROIT 7, MICHIGAN
Special MACHINE TOOLS

nenga as chief engineer of all divisions. Mr. Mansfield is retained as an engineering consultant.

Woodward Iron Co., Woodward, Ala., elected **John E. Urquhart** president and a director of the company succeeding **B. C. Colcord**, resigned. Mr. Urquhart had been general superintendent of all operations at Woodward Iron until 1944 when he resigned. He became an organizer in 1946 of Mill & Textile Supply Inc. He disposed of his interest in that company in 1947 and has been retired since that time.

Metal Hydrides Inc., Beverly, Mass., elected **Dr. Peter P. Alexander** chairman of the board and **Louis W. Davis** president and general manager.

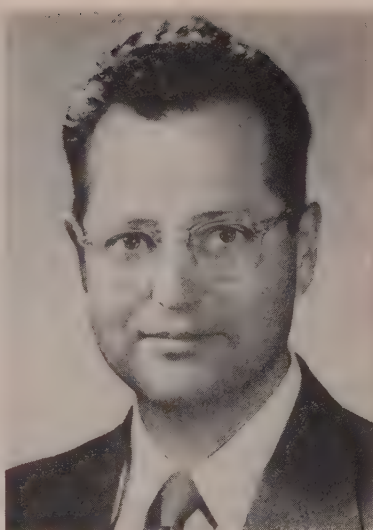
Dodge Steel Co., Philadelphia, promoted **Edward H. Berry** to foundry manager and chief metallurgist and **Henry J. Kelly** as chief engineer.

Farrell-Cheek Steel Co., Sandusky, O., appointed **R. E. Pheiffer** assistant secretary-treasurer and **J. M. Ritter** assistant sales manager.

Robert D. Briggs was placed in charge of sales and service in the Cincinnati territory for **C & D Batteries Inc.**

H. R. Ryan transfers to the Indiana Harbor Works, East Chicago, Ind., of **Youngstown Sheet & Tube Co.**, as superintendent of the new No. 2 open-hearth department. **Robert Frushour**, formerly with **Edgar Thomson Works, U. S. Steel Corp.**, joins the company to succeed Mr. Ryan as superintendent, bessemer and open-hearth department, Campbell plant, Youngstown.

Francis J. Sehn, former Detroit district sales engineer for **Clearing Machine Corp.**, was elected vice president-sales at **Sahlin Engineering Co.,** Birmingham, Mich.



JOHN A. DEITRICH
... new president, Hind Steel Co. Inc.

John A. Deitrich was elected president, **Hind Steel Co. Inc.,** Union, N. J. Formerly divisional general manager of **Carpenter Steel Co.,** Mr. Deitrich is known as a pioneer metallurgist in welded stainless steel tube.

Christian F. Beukema of **U. S. Steel Corp.**'s raw materials division in Pittsburgh, was named general manager of operations, **Michigan Limestone Division,** Detroit.

Murray E. Rhue, director of manufacturing, **Morgan Engineering Co.,** Alliance, O., resigned as of Mar. 12, and is succeeded by **Harvey W. Bush**, recently general manager of **Rack Engineering Co.**

Roger E. Bremer was appointed director of purchasing, **Packard Motor Car Co.,** Detroit. He succeeds **Russell R. Rees**, a Packard executive for 38 years, now retiring. **Oliver E. Rodgers** was made chief engineer, jet engine division. Mr. Bremer joins Packard after serving as purchasing agent for **Lincoln-Mercury.**



AUGUST B. HOEFER
... new duties with Udylyte Corp.

August B. Hoefer was elected vice president, **Udylyte Corp.,** Detroit, and vice president and general manager of **Frederic B. Stevens Inc.,** subsidiary company. His headquarters will be in Detroit.

Warren T. Trask was named assistant manager, metal division, **National Lead Co.'s** St. Louis and southwestern branches. He continues manager of the steel plate division.

Ralph E. Knowles, formerly work manager, armament division, **United States Electrical Tool Division,** Emerson Electric Mfg. Co., St. Louis, was appointed division manager at Cincinnati to succeed **Henry C. Levenson**, resigned.

Trailmobile Inc., Cincinnati, appointed **E. W. Barnekoff** director of purchases and **W. H. French** Cincinnati plant purchasing agent. **L. P. Haverkamp** was made general plant controller of the company subsidiary of **Pullman Inc.**

Ohio Ferro-Alloys Corp. appointed
(Please turn to Page 118)

OBITUARIES...

Harold C. Osman, 61, vice president, **Crucible Steel Casting Co.,** Lansdowne, Pa., died Mar. 17.

Ernst Hediger, 51, general manager, **Globar Division, Carborundum Co.,** Niagara Falls, N. Y., died Mar. 19.

Walter W. Patnoe, 65, chief engineer, **Basic Refractories Inc.,** Cleveland, died Mar. 4.

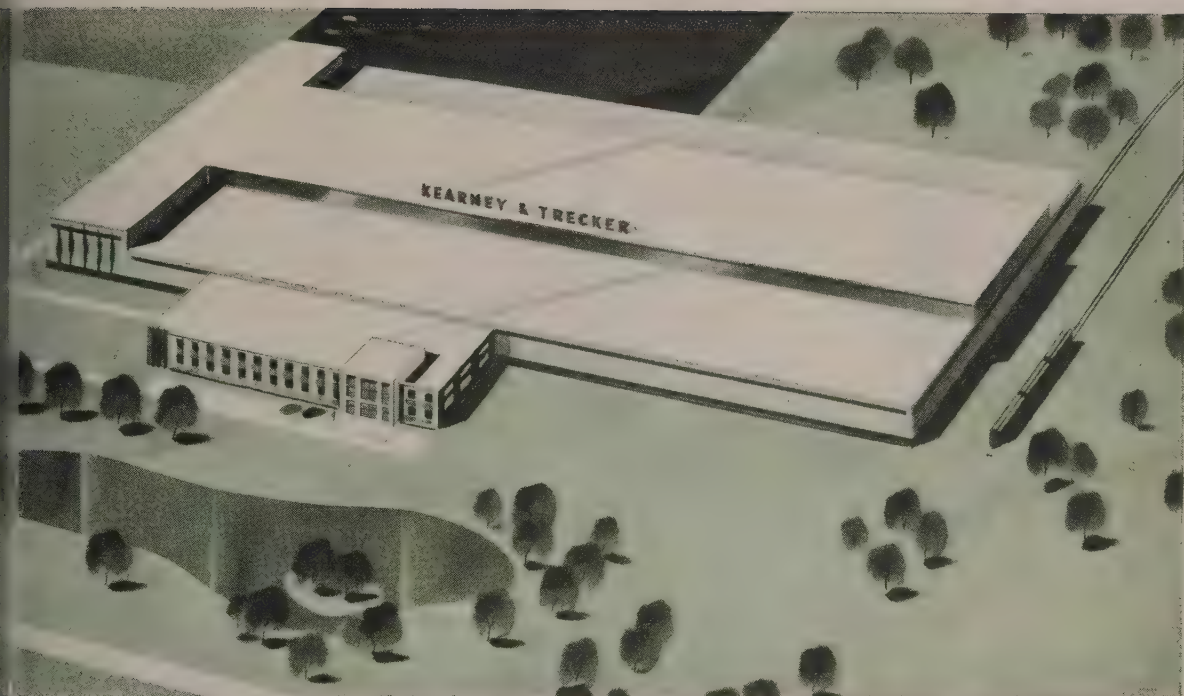
Adolph Peters, general manager, **Wm. J. Hunt Mfg. Co.,** Baltimore, died Mar. 11.

Charles W. Engle, former superintendent and chief engineer, **Jones**

& **Laughlin Steel Corp.** plant in Pittsburgh, died Mar. 19.

Charles R. Kuehn, 57, assistant treasurer, **United States Steel Export Co.,** New York, died Mar. 16.

Stephen Pesky, 54, president, **Empire Brass & Aluminum Foundry Inc.,** Milwaukee, died Mar. 19.



Here it is! Kearney & Trecker's new Special Machinery Division — nearly 200,000 sq. ft. of new plant with new tools and equipment. An experienced, fully-staffed

team of sales, engineering and production experts is ready and waiting to serve you . . . by engineering new production methods.

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This plant is being built for you . . . to engineer *new* production methods — to build the large or small special machines, tools and fixtures you need to improve production and cut costs.

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Will special machines, special tools and fixtures or special arrangements of standard machines help you solve these problems?

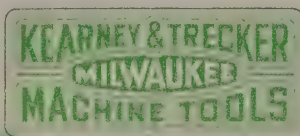
Then why not be among the first to take advantage of the 5-million-dollar-plus investment that Kearney & Trecker is making in new plant, new tools and new engineering to help you solve them.

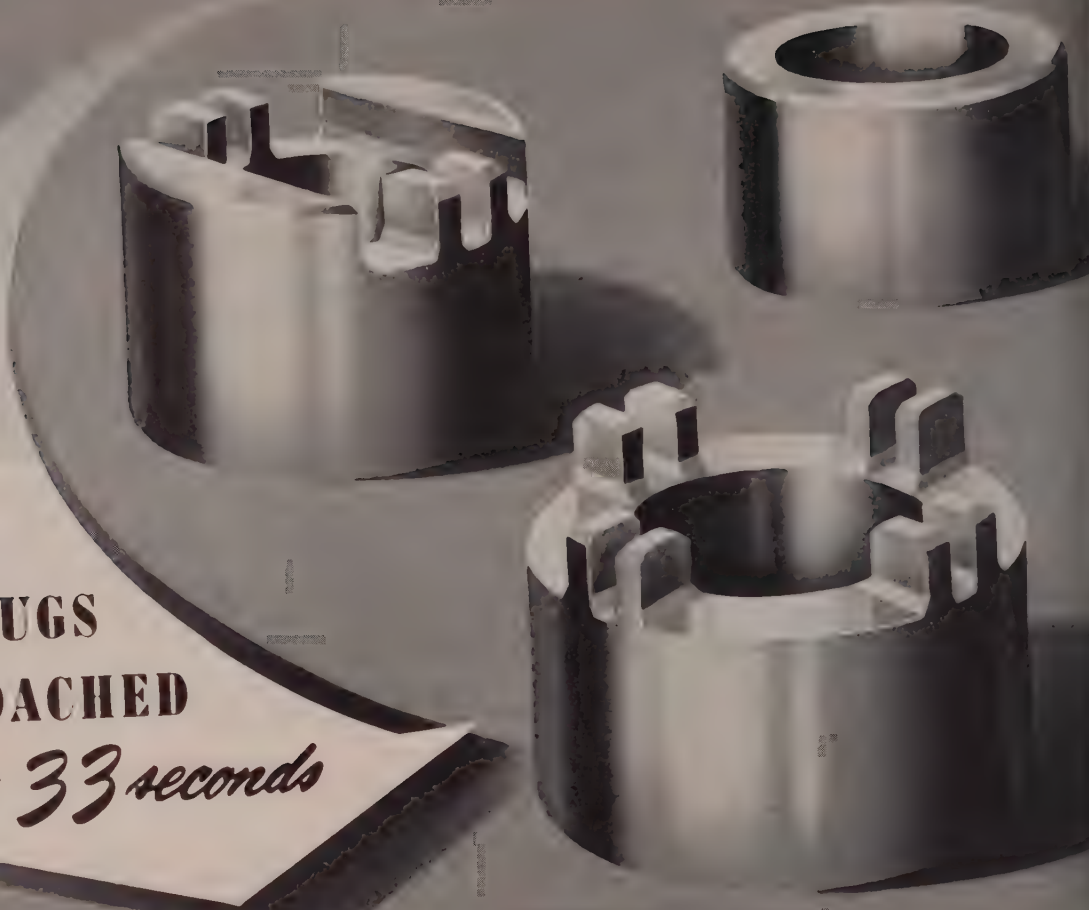
Kearney & Trecker *is no newcomer* to the field of special machine tools and allied special equipment. During the past 50 years millions of dollars worth of Kearney & Trecker special machinery has been produced for plants all over the world. And that doesn't include the 60,000 standard Kearney & Trecker milling machines

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8 LUGS BROACHED *in 33 seconds*

To produce eight single lugs on the end of a steel sleeve was a problem recently given to Detroit Broach.

After analysis of the operation, Detroit Broach recommended a single ram vertical surface broach to do the job. One of the problems within the job, in addition to increasing output, was the necessity of holding a close tolerance between the lugs.

The vertical broaching machine was set up with a two-station fixture which power-clamps the parts. A single pass of the broach forms four lugs across the sleeve. The sleeve is then indexed 90° and the other four lugs are formed. Complete cycle time—33 seconds per completed part. Slot tolerances are easily held and surface finish on the lugs requires no additional machining.

This is just typical of the specialized broaching techniques evolved by Detroit Broach for leading manufacturers. You, too, may have an application that can be materially reduced in time or cost by the economy of broaching or by review of present broach tooling. It will pay you to consult Detroit Broach for engineering or production data.

WORLD'S LARGEST MANUFACTURER OF BROACHES AND BROACHING TOOLS EXCLUSIVELY



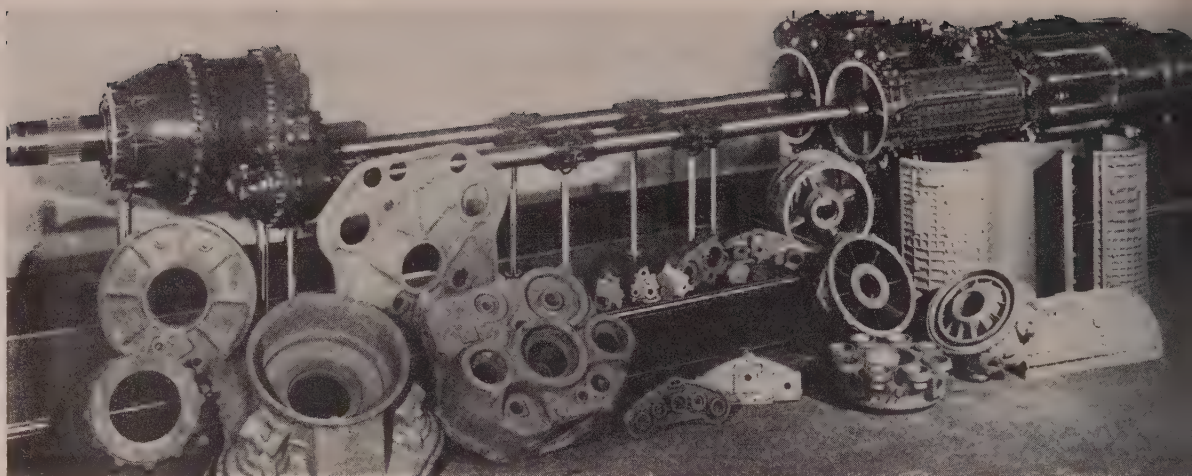
DETROIT BROACH COMPANY

20201 SHERWOOD AVE.

DETROIT 31, MICH.

BIG CUTS—Two factors share the credit for sizable reductions in machining time and elimination of much scrap in heavy metal removal. They are: Carbide cutters and tracer attachments. Although the reductions in machining time and operator skills required are enough to sell this technique to most companies there are other benefits that aren't so readily apparent. No longer is it necessary to stock hundreds of form tools as was necessary when using the plunge cut method of turning rolls on piano-

DOWNTIME DEMON—Success in reaching out for the automatic factory will depend on ability to control costly downtime for expensive machine tools. Ralph E. Cross, executive vice president of Cross Co., Detroit, told members of the American Society of Tool Engineers at their Detroit meeting that downtime for changing tools is the real fly in the ointment. It's responsible for more than 75 per cent of all lost production time and is the only factor that has not been mechanized to any great extent. According to Mr. Cross, we will be able to maintain a complete line production at greater than 90 per cent efficiency by utilizing new devices which will eliminate downtime for tool changes. These devices will include the so-called automatic brain and the feed back principle.



Magnesium sand castings reduce weight and provide added ruggedness in the Allison T-40 turbo-prop engine. Magnesium takes 570 pounds of 2500 total

Magnesium's Sights Set High

Currently the emphasis is on weight saving in military applications but long range growth depends on additional civilian uses. New facilities provide growth cushion

By A. W. WINSTON
Asst. Manager, Magnesium Department
Dow Chemical Co.
Midland, Mich.

BORN of military necessity in the first World War and reaching the peak of its output to date in the second, magnesium holds considerable promise as a metal whose consumption will rise at a rate unmatched by other metals in the years to come. This is not the estimate of optimists within the industry but data contained in the Paley report. Consumption in 1975 is set at 384,000 tons compared with 55,000 tons consumed in 1952 and 44 tons in 1915 when the industry had its start.

Tremendous emphasis being placed today in the current defense program on military aircraft, airborne equipment, and air transportation is resulting in a much broader use of magnesium than experienced during the war, when castings made up the greatest use. Then the industry expanded a hundred fold over night and it was necessary to limit the usage of magnesium to applications proved and established in earlier development work. Fabrication facilities also were not available to produce sheet and extruded forms in significant quantities and applications were not developed to use these products.

Few Croppers—In general, the war experience with magnesium was excellent and the number of misapplications was surprisingly small, a tribute to the government services, the designers, contractors and fabricators, many of whom had no previous experience with magnesium. One fabricator, in producing aircraft control instruments, used, with outstanding success, approximately 13 million magnesium die castings.

Before the war there were about a half dozen foundries sand casting magnesium. By 1944 their number had increased to 60, doing a creditable job of producing aircraft landing wheels, engine parts, air frames and air accessory castings. The current defense program resulted in the reactivation of some of these wartime fabricating plants and some new sources were developed, totaling about 30 foundries and a dozen other fabricators.

Building for the Future—Real long-range strength of the magnesium industry must depend upon a stable foundation of civilian business. This is recognized by the government during the present rearmament program and considerable quantities of metal and fabri-

cating facilities remain available to civilian industry. This encourages fabricators who in 1950 were greatly concerned lest rearmament again drive many out of civilian development.

Growth curve predicted in the Paley report is, in the main, growth of civilian uses and to attain it, a history of continued development is necessary. In addition to the structural uses, potential large uses are being developed in other fields. These include expansion of the already well-known metal additions to nickel, zinc and aluminum alloys; the addition of gray iron to produce ductile cast iron; and chemical use in the production of titanium and several organic materials. A large field of rapid development is the cathodic protection of pipe lines, hot water heaters and ships. The use of magnesium in dry batteries is still in the pilot plant stage but this will be a major use in time because of the decreased weight and increased capacity obtainable. Magnesium sheet and other forms are finding use in the graphic arts field, in photoengraving processes involving direct printing from magnesium plates.

First International Magnesium Exposition sponsored by the Magnesium Association at the National Guard Armory in Washington, Mar. 31 through Apr. 2, 1953, will be the biggest event ever staged by the industry. Exhibits will include finished products and demonstrations of manufacturing processes.

Doing Well—Other structural applications include truck bodies and boards in the transportation materials handling industries. The light weight of magnesium makes its use particularly attractive for portable tools and ladders and other articles which must be moved and handled frequently. Die castings find limited use in aircraft instruments; much more in office machines. Process developments make their economic use in automobiles a distinct possibility, and many thousands are being assembled into cars every week.

Fabricating capacity for magnesium alloys is of great concern to those contemplating the use of magnesium in defense material. During the past two years the capacity for sand castings was greatly increased through the reactivation of wartime plants and the developments of several new sources. It appears that ample capacity is

available at the present time for both defense and civilian needs. Facilities for die casting currently are fairly well filled but, as the amount of die castings required in the present program is not high, it is believed that ample capacity exists.

Easing the Squeeze—The greatest pinch during the last two years was in the availability of thin sheet and extrusions. To remedy this, one former magnesium rolling mill was reactivated and during the last few months a new rolling source developed specifically for plate and heavier gages of sheet. This enlarged capacity, combined with some changes in the aircraft production program improved the availability of sheet during the last few months.

Development work going on for several years in the application of magnesium sheet would, in anything like an emergency, result in great sheet shortages. To provide for this contingency, a large rolling mill and extrusion plant is now being constructed in Madison, Ill. This plant, when developed to its full capacity operation within the next few years, will be able to provide several times the sheet production now available nationally. A large increase in the capacity for extrusions will also be provided. Mass production techniques will be applied in this project for the first time in the manufacturing of magnesium wrought products, and it is hoped that ultimately, production costs can be reduced to broaden the civilian applications of these structural magnesium forms.

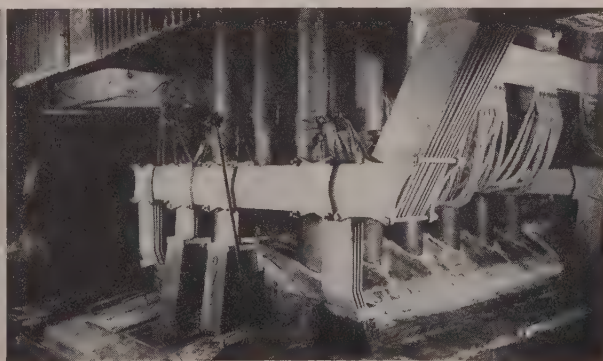
Plenty Available — Increasing fabricating capacity must, of course, have an adequate supply of primary metal. At the moment, this is not a problem in magnesium. The rated capacity of all magnesium plants, understood to be operating at this time, is about 125,000 tons. Of this, the two electrolytic seawater plants account for 65,000 tons and can be considered to be economic. The other electrolytic plants and especially the three ferrosilicon process plants are stated to be non-economic. While it may be desirable to hold them in standby condition as a defense measure, the high cost of their output will prevent their use in developing a civilian magnesium industry.

If we assume that demand for primary will develop about as indicated by the Paley report, it will catch up with the economic primary capacity somewhere between five and ten years from now. For the industry to grow beyond this point, new economic capacity must be developed. In view of the importance of magnesium to our national security, it seems apparent that the government should seriously consider the magnesium situation.

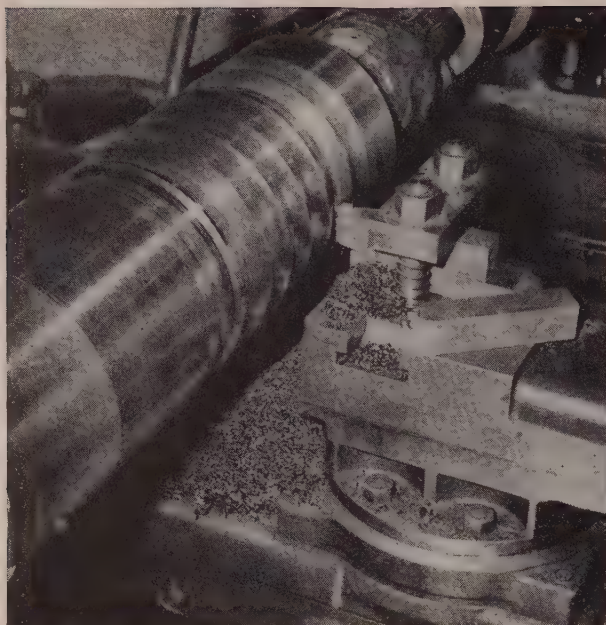
Of special interest in this day of declining ore reserves for many metals, is the unlimited availability of the raw material for magnesium. Not only are solid ores available cheaply and abundantly in many places throughout the United States, but magnesium is available in great quantities in the underground brines of Michigan and possibly other areas.



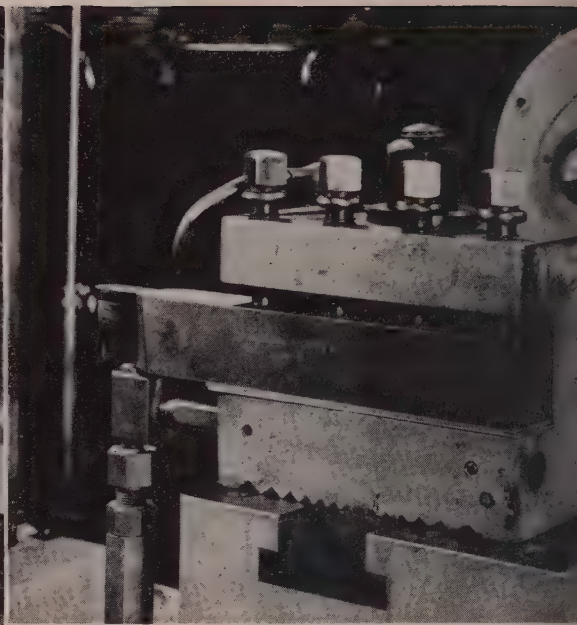
Typical of the automotive die casting applications are these steering gear shrouds. Other uses include housings, oil seal rings and a variety of decorative parts



Dow electrolytic cell for the production of magnesium from magnesium chloride. Raw material is no problem with available capacity exceeding the requirements



Indexable cylindrical carbide insert tool contours cast iron steel mill roll. Time was cut from 25 to 4½ hours



Carbide tool supported for deep contouring. Air-blown nozzle cuts high-temperature strains at the braze point

Contouring Takes on the Heavyweights

Joint development of improved contouring methods and carbide cutters opens another door. It's paying handsome dividends in the heavy metal removal field

By **PATRICK H. GRIBBIN**
Engineer
Kennametal Inc.
Latrobe, Pa.

ALTHOUGH contouring equipment is new to the heavy metal removal field it has been used during the last 25 years for simplified contouring of shafts.

Contouring used to be done by locating a drawbar on the back of the machine which generated tool carriage travel into the required contours or designs being machined into the workpiece. Before tracer attachments—hydraulic, pneumatic, electronic and mechanical—were added to machines it was general practice to rough out a workpiece skillfully by operating both the longitudinal and cross-feeds manually.

Took Skill—This practice was used on engine lathes and saved time for the operator who was required to finish at slower speeds

in blending radii and angles to specifications of the desired contour. If the roughing-out process was not skillfully performed, many times the result was a scrap workpiece before the desired finish could be obtained.

Contouring is now an accepted practice. Many hidden savings realized through use of contouring together with impressive machining-time reductions are based on proved performance in the heavy machining field. Here are some savings you can realize in your shop with carbide contouring.

Less Skill Required—In the past operators had to have "know how" to rough and finish manually. This required a greater number of machine hours due to the necessity of plunging and blending the var-

ious shapes that were designed into the workpiece.

With modern tracer devices, a class C machinist can be employed because of less skill required due to the job's over-all specifications being controlled by the guide template. This only requires the operator supplying correct feeds and speeds to machine the workpiece's specific hardness.

Less Machine Time—Alloy steel rolls (495 Brinell) with an 11-inch diameter are contoured. Rough turning the excess stock on the roll's diameter is performed at 22 rpm with 0.031-inch per revolution conventional longitudinal feed using a mechanically held Kennametal K6 cutting tool. Roughing of the contoured shapes into the roll is also at 22 rpm with the

er attachment operating at
s of 0.187 to 0.375 transverse
0.375 to 0.750 longitudinal
per minute.

ntour of this workpiece is
hed at 17 rpm with the tracer
hment operating at feeds of
3 and 0.187 transverse and
7 to 0.375 longitudinal inch
minute—all feeds controlled
rheostat. Tool used for both
hing and finishing is a stan-
brazed style C which can
y be modified for many in-
ed angles and radii. This job
sumed 35 to 40 hours using
"plunge-cut and blend method".
g the contouring method it
completed in only 8 hours.

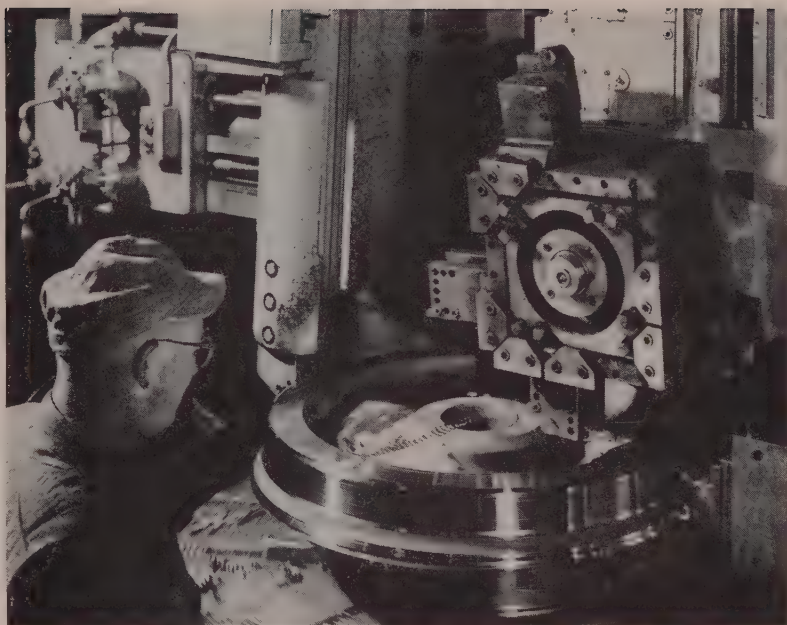
uniformity—Ability of tracer
rols to duplicate with an ex-
cess offers a precise method of
aking alignment and guarantees
of assembly. Also, as the op-
ion is machine controlled and
human element minimized,
p is virtually eliminated.

performance regardless of ma-
e is based on cutting tool's
ty to operate at feeds and
nds necessary for long tool life
a attendant high production.
mendous savings are realized
long-life standard carbide
s able to machine workpieces
ardnesses heretofore unmachin-

ooling Simplified—Formerly it
necessary to stock hundreds of
n tools when using the plunge
method of turning rolls on pi-
type lathes. However, with con-
taining practices many tools are
aced with a few standard car-
tools. Tracer attachment per-
s a general purpose tool room
andle the relatively few carbide
s needed for contouring—and
no added overhead expense.

ndex Tips—Much is to be gained
application of indexable carbide
ing tools. Outstanding savings
possible when using indexable
with tracer or contouring at-
tachments. Here again we should
ation the hidden savings real-
. Some of these are: Lessened
n-time, reduced tool mainten-
e, easy regrind control of ac-
ate tool shapes, in addition to
ide's ability for taking advan-
e of present day machine tools'
est capacity by use of optimum
ds and speeds.

contouring with indexable car-



Multiple-tooled carbide application machining forged steel freight car wheels. Contouring tools at lower right machine back rim, flange and fillet

bides has also proved large radii
are practical on single point tools
particularly for use with old ma-
chining equipment. Where a stand-
ard form is desired the indexable
multiple cutting edges of carbide
tips or inserts have numerous sat-
isfactory applications.

Feed Changes—An example is
contour or tracer turning and fac-
ing rough forged wheels at 180
sfm at 0.031-inch feed per revolu-
tion. All wheels are in a Brinell
hardness range of 302 minimum to
341 maximum. Stylus of the con-
touring attachment located on the
side head guides the carbide tool
along the contour that is being ma-
chined.

Screw feeding mechanism effects
four changes—0.007 to 0.013 to
0.031 to 0.041-inch per revolution.
This again shows capabilities inher-
ent in indexable mechanically-held
round carbide inserts. Removal of
3/16-inch stock on the side is com-
pleted in one cut with the excep-
tion of the hub where 1/2-inch of
stock is machined quite easily due
to its lower Brinell hardness of 265.

Longevity—Tool life is as fol-
lows: Facing operation uses a 1 1/4-
inch diameter by 2 1/2-inch round
carbide insert which gives six in-
dexes and a production of 65 wheels
per index. Length of insert affords
ample stock for exceptionally long
regrind-life.

For contouring the flange and
cutting the tread, this type of car-
bide insert gives five indexes at a
production of 10 wheels per index
using 1 1/4-inch diameter by 2 1/2-
inch round carbide inserts.

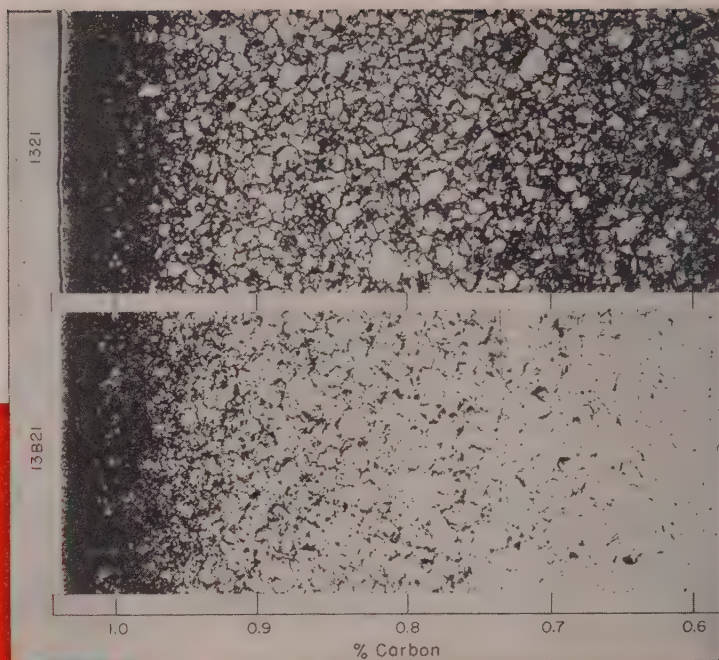
Highway for Heavyweights—
Same carbide-tooled applications
may be used for machining single
wear, multiple untreated and mul-
tiple treated wheels. Number of
pieces machined per index will vary
due to the particular type and
hardness of the wheels being pro-
cessed.

Tracer turning as described
above, on shafts, small rolls and
car wheels has paved the way for
the heavy-duty equipment which
is now being used for contour ma-
chining 60-inch diameter steel mill
rolls weighing 35 tons.

Carbides, by giving operators a
five-to-one reduction in machining
time, plus a uniformity of finish
and adherence to specifications,
have been directly responsible for
the rapid development of new con-
touring attachments.

Present trend of tracer equip-
ment manufacturers is to prove
their attachments can be applied
to existing machinery. Next devel-
opment will be devices for handling
workpieces in such a manner as
to assure continuous contour ma-
chining—eliminating costly pro-
duction downtime.

Microstructure in the carburized case of 1321 (top) and 13B21 (bottom) at 1 inch from quenched end of the hardenability specimen. Picral etch. 200X



New, Old Metals

SHARE ADVANCES

Titanium and zirconium, as metals of the future, vie with steel at ASM sessions of Western Metal Congress. Metallurgists report improved techniques along the entire front

GLAMOUR METALS vied with the more conventional ones for top interest in the ASM technical program at the Western Metal Congress, held at Los Angeles, March 23-27.

Highlights on the glamour side were symposia on titanium and zirconium. The vast interest in the zirconium field was exemplified by presentation of 21 papers—unprecedented so far as this metal is concerned. Little-known until recently this wonder metal is destined to play an important role in atomic power plants because of its corrosion resistance and favorable neutron properties. This accounts in a large part for the tremendous effort going into its metallurgical development.

Molybdenum and new nonferrous alloys came in for their share of the limelight. Not to be overlooked

was the valuable data given on the case hardenability of boron steel.

Boron and Hardenability — At different carbon levels, hardenability varies in the carburized case of a boron-free steel because of the effect of carbon upon hardenability.

It varies to a greater extent in a carburized boron steel because of the combined direct effect of carbon upon hardenability, and the indirect influence of carbon in affecting the hardenability contributed by boron.

In work conducted at U.S. Steel Corp. laboratories by R. A. Grange and J. B. Mitchell, the effect of carbon and boron upon the hardenability of carburized steel was measured by examining the microstructure at selected carbon levels throughout the case and in the core of case hardened, end quenched hardenability specimens

of a matched pair of 2 per cent manganese steels, one with one without boron.

Results of this study reported at the ASM technical session show that in the plain carbon steel, hardenability increased as carbon increased to 0.8 per cent and decreased with higher carbon. An important point: The quantitative hardenability effect of carbon is greater the larger the percentage of martensite selected as the criterion of hardenability.

Select a Standard—The Steel researchers pointed out the pattern of hardenability variation through a carburized case, either a plain or a boron steel. Especially the latter, depends some extent upon the hardenability criterion. In the past it has been common practice to use 50 per cent martensite as the criterion of

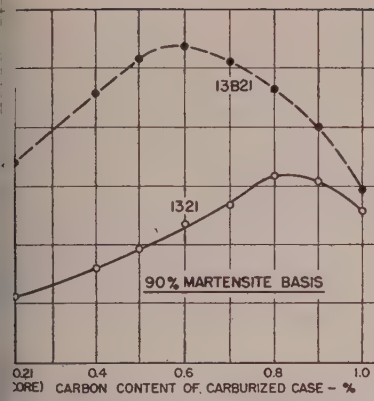


Fig. 1—Variation in hardenability throughout case of carburized 1321 and 13B21 steel

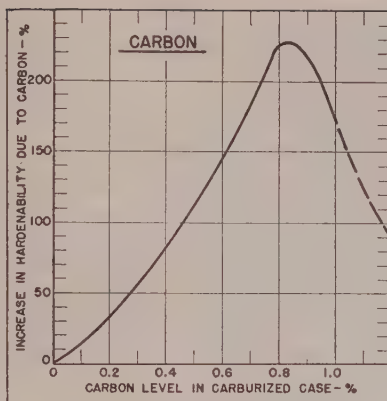


Fig. 2—Hardenability effect of carbon in carburized steel. 90 per cent martensite basis

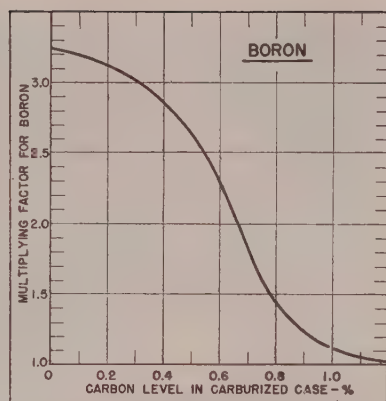


Fig. 3—Hardenability effect of boron in carburized steel. 90 per cent martensite basis

bility because measurements are easier to make on this basis. However, a hardened steel containing only 50 per cent martensite is not satisfactory for many applications.

The use of 50 per cent martensite as the hardenability criterion is justified only if carbon and the alloying elements can be shown to have essentially the same hardenability effect on a 50 per cent basis when a higher percentage of martensite serves as the criterion. This was not true in carburized 1321 and 13B21, which were used in this study. Presumably, it will be true in other carburized steels.

Not Necessarily 100 Per Cent—Commercial experience has shown that even in highly stressed parts, a hardened structure need not contain 100 per cent martensite; 80 to 90 per cent martensite is adequate. Recognizing the desirability of choosing a definite percentage of martensite as the criterion of hardenability in order to facilitate subsequent comparisons, experimenters Grange and Mitchell selected 90 per cent martensite as the criterion for their tests.

The curve in Fig. 1, shows values for each steel used in the tests plotted as a function of the carbon level in the carburized case. These curves show that although the boron steel has relatively much greater core hardenability, its case hardenability is only slightly greater in the outer case.

At 1.0 per cent carbon, the hard-

enability of the boron steel is lower than in its core; whereas case hardenability of the plain steel at this carbon level is much higher than in the core. The trend at high carbon levels suggests that hardenability would continue to decrease at carbon levels above 1.0 per cent.

This demonstrates the disadvantages from the standpoint of hardenability in carburizing to very high carbon levels, especially when using a boron steel. The curve for carburized 1321 attains maximum hardenability at 0.8 per cent carbon as compared to a maximum at 0.6 per cent carbon in boron steel.

Assuming these data for carburized 1321 and 13B21 are reasonably representative of other carburized grades, it is obviously not pos-

sible to match a boron steel and plain steel with respect to hardenability throughout both base and core. For the same core hardenability, case hardenability is sacrificed when a boron steel is used.

How to Estimate—Data obtained in the investigation gave the quantitative effect of carbon and boron on hardenability of these 2 per cent manganese steels and may be used to calculate the approximate hardenability of other steels. Fig. 2 indicates quantitatively the increase in hardenability as carbon increases and Fig. 3 shows the hardenability factor for boron as a function of carbon content.

In the method of estimation proposed by the investigators the core hardenability is multiplied by a fac-

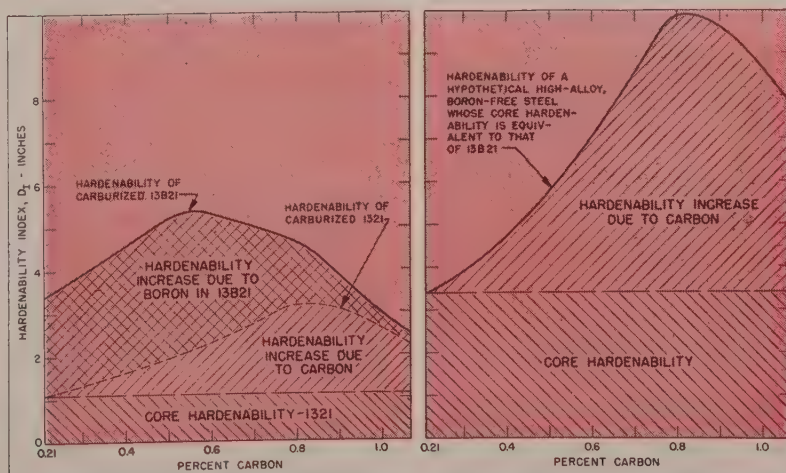
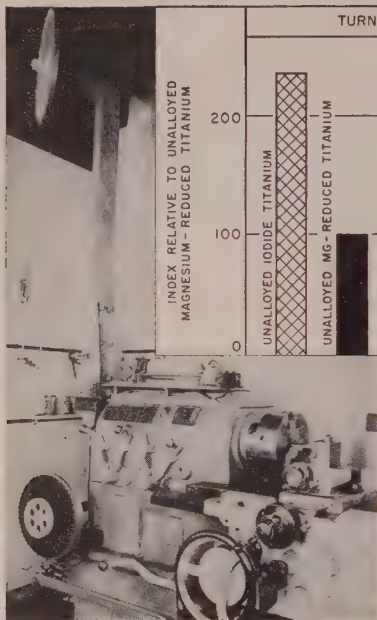


Fig. 4—Estimation of case hardenability. (Left)—Carburized 1321 and 13B21; (right) a hypothetical high-alloy boron-free steel whose core hardenability is equivalent to the core hardenability of 13B21 containing boron



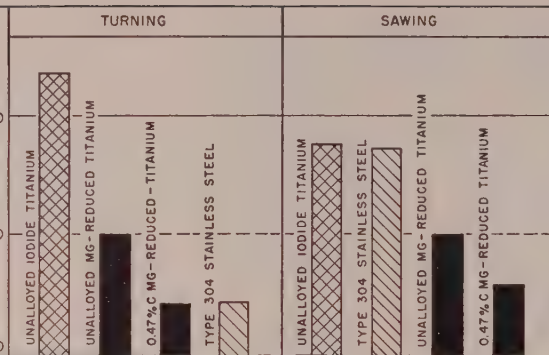
Equipment for testing machinability of titanium. This type machine was also used in the development of a superior bessemer free-cutting steel

tor for carbon, and if a boron steel, by a factor for boron at each of a series of carbon levels in a carburized case.

This method applied to a high alloy, boron-free steel with a core hardenability equivalent to a 13B21 steel indicates that such a steel would have much greater case hardenability than carburized 13B21. In fact, it does not seem possible to match a boron steel with a higher alloy steel in respect to both case and core hardenability. If the core hardenabilities are equivalent, the case hardenability will be lower in the boron steels.

New Copper Alloy—Research at Battelle Memorial Institute has resulted in a new age-hardenable copper base alloy containing about 10 per cent nickel, 1.5 per cent silicon, and 4.0 per cent aluminum. According to the report given by D. B. Roach, R. B. Fisher, and J. H. Jackson the alloy can be readily formed in the solution treated condition and can be age hardened to the following properties:

Yield strength 120,000 psi
Tensile strength 140,000 psi
Elongation 8 per cent
Proportional limit 85,000 psi
Modulus of elasticity 19 million psi
Electrical conductivity 11% of copper



Comparative turning and sawing indexes for unalloyed titanium, type 304 stainless and a titanium-0.47 per cent carbon alloy based on Battelle tests

Cold work (about 15%) before the aging treatment will intensify the properties obtained by aging to the following values:

Yield strength 129,000 psi
Tensile strength 143,000 psi
Elongation 5 %
Proportional limit 104,000 psi
Modulus of elasticity 19 million psi

This alloy appears to be a possible replacement for applications where the extremely high tensile strength of copper-beryllium alloys is not required. The alloy is being considered for the production of spring contacts to be utilized in various types of business machines.

Improved Heat Treating Pots—Other work was carried out at Battelle to improve the corrosion resistance of heat treating salt containers. Results reported by J. H. Jackson and M. H. LaChance indicated possibility of service life improvement of the order of one and a half to five times normal pot life.

The resistance of a 15 chromium-35 nickel and a 12 chromium-60 nickel container to corrosive attack and particularly intergranular attack can be increased by reducing carbon content to about 0.08 per cent. Normally the carbon content is around 0.45 to 0.50 per cent.

It was reported that an alloy of 17 per cent chromium containing little or no nickel will perform as well as or better than some of the higher alloys in all the chloride-type baths if they do not contain sizable quantities of carbonate.

Zirconium

Although of relatively recent major interest, zirconium is the subject of intensive research as exemplified by some 21 papers presented at the ASM zirconium symposium.

Researchers at Horizons Inc., reported on work involving a survey of some 80 salt bath systems to determine a suitable electrolytic bath for the production of zirconium.

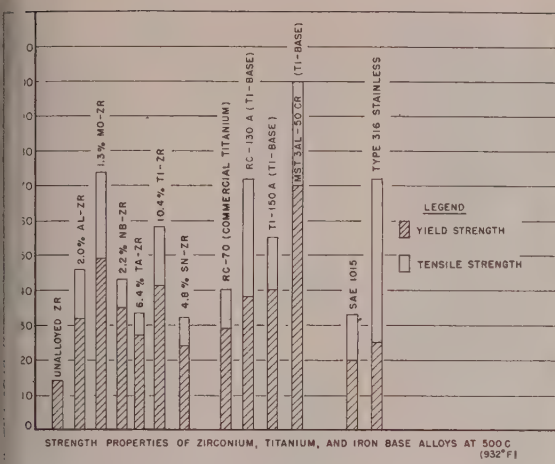
A fused salt bath containing 2 to 35 per cent of potassium zirconium fluoride (K_2ZrF_6) in sodium chloride ($NaCl$) looks good for zirconium production. High current densities and temperatures of the order of 1561 to 1650° F give optimum results, producing coarse granular zirconium powder, easily recoverable by a simple washing technique.

Special Precautions—The production of ductile crystalline zirconium metal was achieved through use of an inert atmosphere carbon resistance furnace. High purity starting materials and an oxygen-free atmosphere are important in obtaining a high purity product through fused salt electrolysis.

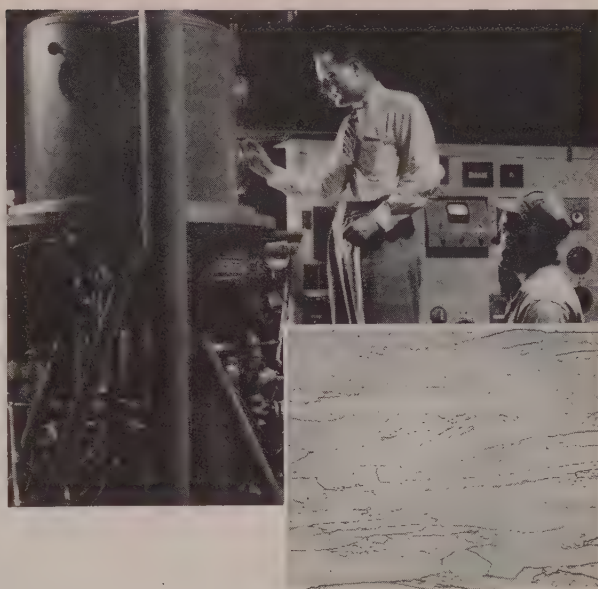
Special electrolytic cells, heated by carbon resistors and operating in an inert atmosphere of argon were used. This work, which was conducted under contract with the Atomic Energy Commission, points toward a practical electrolytic method for producing high purity zirconium. A significant aspect is that the new process employs readily available materials and uses only modified forms of standard equipment.

At present time zirconium metal is produced by the Kroll process, which uses magnesium for reduction to sponge, or by the iodide method. It is melted in either a graphite or water cooled copper crucible in a vacuum or inert atmosphere.

Fabrication Grows Up—R. B. Gordon and W. J. Hurford, Westinghouse Atomic Power Division, reviewed the development of zirconium fabrication technology from laboratory work on 2-pound ingots in 1949 to present conversion practices for 500-pound ingots. Zirconium can be readily fabricated despite the fact that its properties and characteristics are somewhat



Comparative strength properties of zirconium, titanium and iron base alloys at temperature of 932° F (500° C)



Experimental furnace for melting molybdenum. Micrograph shows longitudinal section of unalloyed molybdenum—250X

ferent from those of most other common metals.

Once these differences are understood, the metal can be worked to practically any shape or form, in many cases with equipment and processes used for other metals. Arc cast zirconium ingots are currently made in diameters from 4 to 12 inches with weights up to 10 pounds. Prior to fabrication, ingots are rough machined to a diameter where their surface is relatively free from defects.

How To Forge—Four-inch diameter ingots are heated for not more than one hour at 1800° F while ingots as large as 10 inches in diameter are soaked for only two hours prior to forging. Although these times are shorter than those used for most metals, zirconium works very easily after such a short heating time and does not crack during forging and rolling. Arc cast ingots are completely free from the center burst difficulties found in round ingots of other metals that are made by conventional casting practice.

Zirconium alloy ingots up to 10-inch diameter have been pressed on a 500-ton forging press; however, several reheats were necessary to work the material to 2½-inch thick 8-inch wide slabs. With a 1000-ton press, 12-inch diameter ingots have been easily pressed into the same size slabs without reheating. A 6000-pound air operated forge hammer will also work the 12-inch diameter ingots.

Strip Fabrication — Billets or

slabs are conditioned for rolling into strip or sheet by sandblasting, etching in a nitric-hydrofluoric acid mixture and grinding the surface to remove local defects. Slabs 2½-inches thick are heated for 40 to 60 minutes in either gas or electric furnaces and then rolled. Rolling can be done in any conventional rolling mill. However, it should be capable of reducing the slabs to strip without reheating so that contamination of the strip is minimized.

Machines Like Aluminum — Iodide and sponge zirconium with carbon contents of less than 0.1 per cent, as normally produced by arc melting, are readily machined by all standard operations such as turning, drilling, tapping, boring, slab milling, face milling, sawing and grinding. The general machining characteristics of zirconium are similar to those of aluminum except for the greater abrasiveness of zirconium which results in somewhat greater tool wear.

Experimental fabrication of zirconium has been done by the following companies: Allegheny-Ludlum Steel Corp., Babcock & Wilcox Tube Co., Bridgeport Brass Co., Carpenter Steel Co., Firth Sterling Inc., Heppenstall Co., Olin Industries Inc., Superior Tube Co., and Universal-Cyclops Steel Corp.

Oxygen Helps Strength —

Strength of zirconium at elevated temperatures is improved by addition of oxygen, according to R. M. Treco, Bridgeport Brass Co., who reported on zirconium-oxygen alloys at the symposium.

Experiments showed that the strength properties of pure crystal bar zirconium are enhanced by the addition of small amounts of oxygen with resistivity and ductility only slightly impaired, while larger amounts give brittleness. The zirconium-oxygen alloys had good working properties and were comparable to pure zirconium in this respect.

Titanium

At the opening session of the titanium symposium, F. D. Rosi and F. C. Perkins, Sylvania Electric Products, presented data on strain aging effects. The tensile properties of titanium of commercial purity were investigated in the temperature range -196°C to 652°C at constant strain rates of 0.003 min⁻¹ and 0.138⁻¹. The results of these tests showed that titanium exhibits the usual mechanical effects that are associated with the strain aging phenomenon.

Not Unexpected — The experimenters pointed out that this is not surprising since titanium contains as impurities small amounts of nitrogen and carbon, which are

generally associated with appearance of these effects. The maximum yield point effect appeared to occur around 232°C. Discontinuous yielding or serration in the stress-strain curves was observed in a higher temperature range.

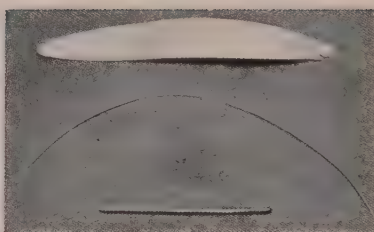
Aging at 200°C (392°F) resulted in both the appearance of a yield-point and a strengthening in the room temperature curve of a specimen which had been given a pre-strain of approximately 5 per cent.

Machining Titanium — Battelle Memorial Institute researchers reported on work sponsored by Kennecott Copper Corp. to study the machinability of titanium. Turning tests and saw tests were used for the evaluation.

The equipment used in the machining tests was developed at Battelle and among other things was instrumental in previous work on the development of a superior bessemer free cutting steel. It consists basically of a lathe with the tool carriage disconnected from the fixed feed mechanism and mounted on ball bearings. The test machine also provides a means for applying a predetermined lateral tool pressure and a device for recording the number of spindle revolutions occurring during a certain length of tool travel.

Boron and Arsenic Help—Titanium was found to be sensitive to the conditions of testing, particularly tool thrust. In the turning test, various combinations of tool thrust and surface speed of turning were investigated. High purity titanium made by the iodide method was much more machinable than commercial magnesium-reduced titanium. For alloys made with commercial magnesium-reduced titanium, improvements of up to 40 per cent in turning ratings were noted with low concentrations of boron and arsenic, while improvements of up to 10 per cent in saw-test ratings were obtained with low selenium concentrations. Carbon additions were detrimental to machinability.

The Battelle tests showed a good correlation between machinability and strength level. Machinability tends to decrease with increasing strength level. When the strength level is maintained constant, insoluble phases improve machinability. Alloying additions studied were



Fabricated zirconium prepared from electrolytic powder. (Top) — Sheet cold-rolled 96 per cent, 0.008-inch thick; (center) cold rolled and drawn wire; (bottom) ¼-inch cold rolled rod

boron, carbon, beryllium, silicon, sulphur, selenium, phosphorus, tellurium, germanium, and arsenic.

Cold Properties — Investigations have been carried out at Ohio State University to determine the low temperature mechanical properties of two recently developed commercial titanium alloys, RC-130-B and Ti-150-A. The behavior of titanium at low temperatures must be known for efficient design of aircraft structures.

Fatigue, tensile and dilatometry tests were run over the temperature range from 77°F to -321°F. The endurance limits of both alloys were raised at low temperatures; RC-130-B showed the greater increase percentage-wise. Ti-150-A suffers a greater loss in fatigue strength as a result of notching than RC-130-B, but Ti-150-A has a substantially higher fatigue strength at all test temperatures.

Ti-150-A had slightly higher yield and ultimate strengths than RC-130-B except at very low temperatures. Elastic moduli of both materials increased at low temperatures, the increase being greater in Ti-150-A.

Titanium and Oxygen — A report was given on work carried out at the Armour Research Foundation to study the titanium-oxygen system. Titanium oxidizes rapidly above 1200°F, and in such operations as the production of sponge, melting, forging, and heat treatment oxygen must be considered as a possible source of contamination. The Armour workers found that the solubility limit of oxygen in alpha titanium is approximately 14.5 per cent oxygen from 1470 to 3090°F. A marked increase in hardness was obtained with the addition of oxygen to titanium.

Molybdenum

The results of studies at Battelle Memorial Institute to improve the high temperature properties of molybdenum by alloying were given before the ASM research session in a paper by W. L. Bruckart, M. H. LaChance, C. M. Craighead, and R. I. Jaffee. Eighteen different molybdenum base alloys were prepared by hydrogen sintering so that an evaluation could be made of their probable usefulness and service behavior at temperatures below the recrystallization range.

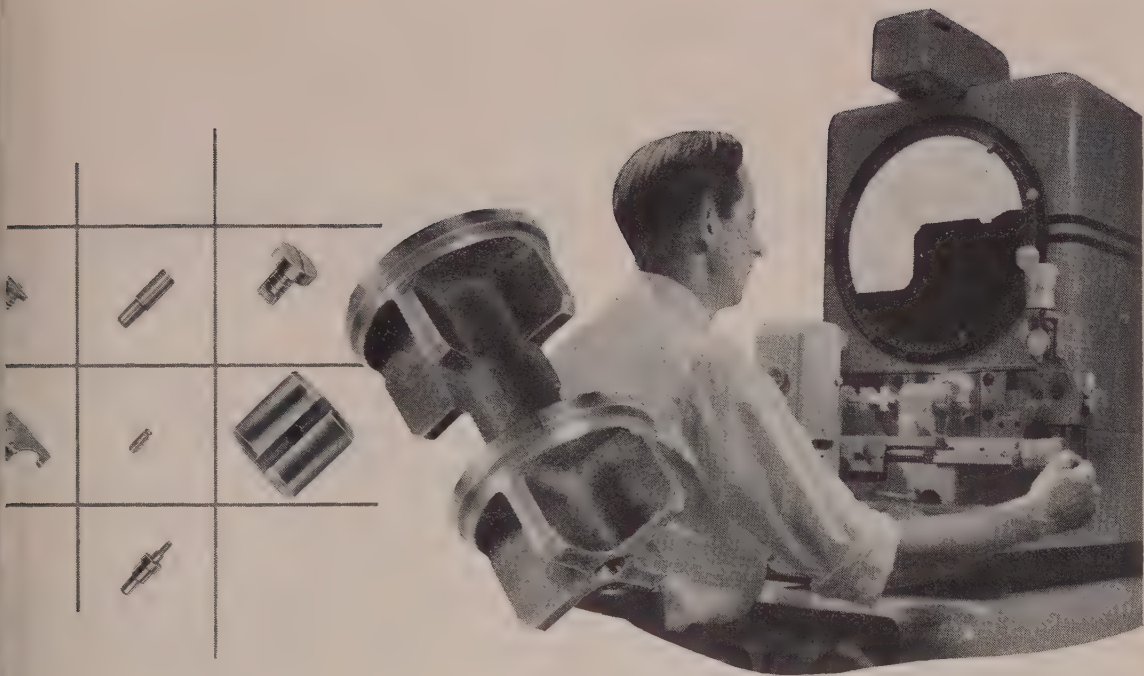
Potency of alloying, that is, the ability of small amounts of alloying addition to strengthen molybdenum was shown by the experiment to be in the order: Silicon, cobalt, iron, aluminum, chromium, and tungsten for the six most effective additions. This order of potency holds for Vickers hardness up to about 1500°F, which is below the recrystallization range.

Most Effective — However, for service the merit of an alloy is measured by the magnitude of its properties, not by the economy of alloying. On this basis, tungsten, which may be alloyed in large concentrations, is the most effective alloying addition for molybdenum despite its small unit strengthening response. Considering the overstrength of alloys possessing adequate ductility, the most effective alloying additions are: 1. 40 per cent tungsten, 2. 0.4 cobalt, 3. 1 tungsten, 4. 0.3 cobalt, 5. 0.25 cobalt, 6. 0.25 iron, 7. 0.4 iron, 8. 1 chromium, 9. 20 tungsten, 10. 0.5 silicon.

On the other hand, if the alloys that are hard to fabricate and erratic in their fabrication behavior are eliminated, the most effective alloying additions are: 1. 0.25 per cent cobalt, 2. 0.25 iron, 3. 1 chromium, 4. 20 tungsten, 5. 0.25 silicon, and 6. 1 aluminum.

Engineering Educators Meet

Evaluation of the job engineering colleges perform will be a broad theme considered by American Society for Engineering Education at its annual meeting Jan. 22-26. This year's convention goes to University of Florida, Gainesville, Fla., with about 100 conferences scheduled.



These parts help give Weston instruments their accuracy... they're checked on Kodak Contour Projectors

There is such a great variety of Weston instruments to measure all sorts of variables in all sorts of ranges that production on most individual items is small.

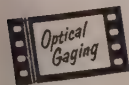
This creates a parts inspection problem. Precision requirements in many cases are so stringent that any measurable deviation from specifications is too big. Setting up toolroom instruments takes too long for the small volume of work being checked at any one time. Mechanical gages are even less economical at the low volume levels, and they just did not give the required accuracy on such jobs as checking the shoulder angles, concentricities, and specifications of the double-acting valve body shown above. (It goes in a recording thermometer and Weston makes it in many different sizes.)

Now Weston has converted to Kodak Contour Projectors. An inspector merely picks up the specification sheet covering a given part, gets the chart

gage indicated there, puts it on the screen of the projector, and proceeds to sample according to specifications. Often, as with the valve body, gage blocks are used to step off the traverse of the projector work table. The inspector notes whether a shadow image coincides with a chart line after the table has carried it by the specified distance.

Possibly your inspection problems are volume and speed rather than the flexibility that Weston wants. In that case you will want to know about the Kodak Contour Projector, Model 3, which is designed for use with special staging fixtures instead of a moving work table. There is a field engineer in your area who can show you which model best fits your problem. To get in touch with him, just drop a note to *Eastman Kodak Company, Industrial Optical Sales Division, Rochester 4, N. Y.*

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Don't Write Off the Blast Furnace

Use of oxygen-enriched blast to correct a hanging furnace is open to question. Introduction of carbon monoxide with blast detrimental to furnace operation and economy

Part III

BELIEF expressed in the specifications that the use of oxygen in the blast contributes to a furnace hanging or bridging is of interest when compared to a contrary belief expressed in United States patent No. 2,051,383. This patent was issued Aug. 18, 1936, to Wilhelm Lennings and Ernst Karwat of Germany, and claimed that the use of oxygen in the blast can be used to correct hanging or bridging. Claims granted in the patent read:

1. "Method of overcoming the difficulties associated with the tendency of blast furnace charges to hang, which comprises increasing the oxygen content of the blast until the disturbance has been corrected.

2. "In a blast furnace smelting process, the method of correcting a hanging of the charge, which comprises increasing the oxygen content of the blast, and decreasing the temperature of the blast, until the effects of the disturbance have been eliminated."

Premises Are Conflicting — The conflicting conceptions of the two patents are of interest because of the indicated confusion of thought regarding effects from use of oxygen-enriched blast. Reasonable analysis of the Totzek furnace condition indicates hanging was caused from overloading the furnace with excessive stock travel. In principle, means suggested in the Lennings-Karwat patent for correcting a hanging furnace is virtually the same as commonly practiced with natural air blowing, namely, "pull heat" until the furnace "moves", or

By CHARLES E. AGNEW

Consultant
Blast Furnace and Sintering Plant Operations
Cleveland

can be moved with a check of the blast. A temporary increase in the oxygen content of the blast would increase the coke combustion rate and consequently create a void into which the stock column could settle. Although reasonably correct in conception it is also reasonable to say that practical value of the claims in the Lennings-Karwat patent are open to question.

The Totzek patent specifications further state:

"As has already been mentioned a common blast furnace designed for the use of normal air as blast tends to freeze up when oxygen content of the blast is increased considerably. *This phenomenon is more surprising as on increasing the oxygen content much higher temperatures in the tuyere zone of the hearth will be found on observation through the tuyeres than in the normal blast furnace operated with air.* However, it has been overlooked that these higher temperatures occur only in a very limited area near the tuyeres and at the same time in a comparatively short distance from the tuyeres the temperature drops to a point considerably below the fusion point of the slag. Therefore, there is no continuous fusion and oxidation zone being formed in the hearth; but on considerably increasing the oxygen content there occurs between the tuyeres of the blast furnace of the usual design the formation of zones in which the slag freezes up and these zones extend into the bosh of the furnace. Be-

cause of these pillar-like walls charge in the bosh is prevented from sliding downward. This is the reason for the occurrence in earlier tests was spoken of the formation of bridges or hanging of the furnace."

The italics in the quotation are the author's and are prompted by the question — what other results could be expected in view of primary carbon combustion reactions at the tuyeres?

Concentration Greater at Tuyeres — Coke carbon combustion reactions at the tuyeres, as proved by measurements by United States Bureau of Mines research, were previously cited and illustrated with calculation in Part II. Inevitably, in a blast furnace, with the Btu generated from CO₂ formation in the primary stage of combustion the concentration of Btu (temperature) will be greater at the tuyeres than in the secondary CO₂-CO reversing stage adjacent to it. Since gas produced from the combustion reaction is the agent for mechanical transfer of heat through the reaction zone to stock in the bosh, there will always be a relationship between rates of heat unit generation, gas flow, and heat unit absorption by stock. Previously it was shown by calculation how a 1 per cent substitution of oxygen for nitrogen in natural air will increase Btu generation from CO and CO formation with virtually no increase in weight of gas produced. With conditions of the Totzek furnace operation, using a

How B&W ALLMUL cuts severe service refractory costs

LEAD DROSS FURNACE

**"ALLMUL proves more economical
than any refractory tried!"**

A plant with several reverberatory type smelting furnaces, used to melt alloys of lead, tin and antimony, carried on an extensive investigation to obtain economical refractory linings. Practically every type of refractory was tried. Side-by-side tests in the same furnace proved the economy of B&W Allmul over all others. Result? Allmul is now standard for these furnaces.

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**"Three times the life
in worst wear areas!"**

A large manufacturer was troubled by the short life of kyanite-base refractories in certain areas of his furnace. Then B&W Allmul were installed in the uptake arches, a critical, severe-service area. Result? Allmul lasted three times as long as previously used refractories and has been ordered for general use in all areas of this manufacturer's furnaces of this type.

INDIRECT ARC FURNACE

**"All furnaces converted to ALLMUL
after comparative tests"**

A large company making alloy steel castings has several indirect arc furnaces melting various alloys, with pouring temperatures varying from 2700F to 3100F. With highest temperature alloys, semi-mullite brick burned out in 6 to 10 heats. B&W Allmul, which cost approximately the same, showed no appreciable wear after 20 heats. On alloy steels in general, this customer reports far-less slag formation (an indication of reduced refractory wear) with Allmul than with any other refractory used. Result: All furnaces are being relined with B&W Allmul Firebrick.

ELECTRIC FURNACE ROOF

**"ALLMUL lasts
3 to 6 times as long"**

In a six-ton electric furnace, handling 15 tons of stainless steel per charge, super duty firebrick had to be replaced every 20 to 40 heats. Pouring temperature of the metal was in excess of 3100F, with higher temperatures attained in the furnace during periods of oxygen introduction. The owner installed B&W Allmul Firebrick, hoping for a life of 80 heats. Allmul in the first roof lasted for 122 heats—42 more than hoped for. The second roof of Allmul went to 131 heats! Result? Further orders for Allmul.

Yes, the facts about B&W Allmul Firebrick speak for themselves. This fused-mullite brick is proving its economy in dozens of severe service applications. The reason? A unique combination of refractory properties—high hot load strength, high resistance to spalling, good volume stability, a high melting point of 3335F—all resulting in lower furnace costs. Want more data? Write for Bulletin R-29.



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R-44B



Doors Open at Boeing's New Flight Hangar

Twenty-four 47-ton hangar doors in the new Boeing Airplane Co. jet bomber flight hangar in Wichita, Kans., are raised easily by compact 15-hp motor drives. Each door is operated by a motor that drives a shaft turning six cable drums through a standard double-enveloping worm gear speed reducer. Michigan Tool Co.'s Cone Drive Gears Division, Detroit, installed the raising equipment

cent oxygen (7 per cent above natural air content) heat and gas production from CO_2 formation compared to natural air combustion would be:

	Increase over natural air, %
Heat produced, Btu (7 x 4.07)	28.49
Gas weight produced (7 x 0.0032)	0.0224

With the substantial increase in Btu generation at the tuyeres and virtually no increase in weight of gas produced the rate of heat transfer through the CO_2 -CO reversion zone would be materially reduced compared to natural air conditions.

Heat and gas production from CO formation, and transfer of heat from the CO_2 -CO reversion zone to stock would be:

	Increase over natural air, %
Heat produced, Btu (7 x 4.34)	30.38
Gas weight produced (7 x 0.0064)	0.0448

With combustion conditions described, it is logical to expect greater concentration of heat at the tuyeres with use of oxygen-enriched air than with natural air, despite the need for heat beyond the dimensions of the CO_2 -CO reversion zone. A condition com-

monly observed in normal furnace operation using natural air for blast may be used for illustration. Data have been presented showing tuyere temperature is normally higher than temperature of iron and slag tapped from the furnace. When a furnace goes cold tuyere temperature drops and the drop is readily apparent to the naked eye—indicating the need for heat by stock has accelerated the normal rate of heat transfer from the combustion zone to stock. If the normal transfer rate is not restored the furnace will get completely out of control and cause sloppy tuyeres.

Details of Thermal Condition—
The principle of a critical point of relationship between stock travel rate and stock heat absorption rate, which can be maintained only by regulating stock travel to conformity with the heat absorption rate, has been cited earlier in this discourse. With this commonly observed phenomenon in mind it is not difficult to visualize the thermal conditions described in the Totzek operation. Here the heat transfer from the combustion zone to stock was accelerated to the limit of the stock heat absorption rate but with the large percentage of increase in heat production rate

(30.38 per cent) and virtually increase in weight of gas produced (0.0448 per cent), plus the limitation to acceleration caused by stock heat absorption rate, there was still sufficient excess of heat unit concentration in the CO_2 division of the combustion zone to cause temperature at the tuyeres higher than the temperature observed when natural air was used despite the need for heat in the furnace beyond the dimensions of the combustion zone.

In the light of proved bosh and hearth reactions the comment that the Totzek patent specifications regarding silica is of interest:

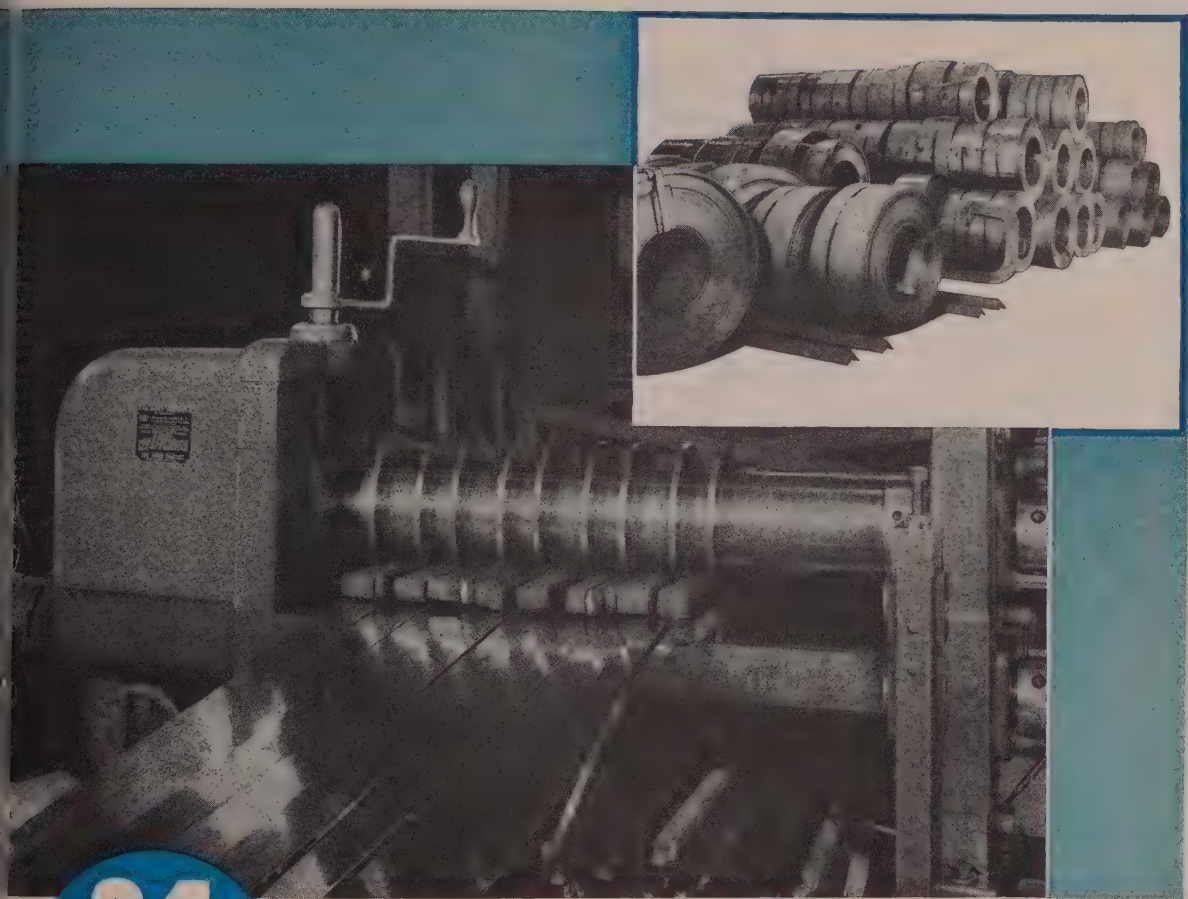
"Further, on a considerable increase of the oxygen content in blast (that is with 30 per cent or more) there occurs near the tuyeres such temperatures that part of the slag, especially SiO_2 is evaporated and therefore the melting point of the slag is raised where the danger of the blast furnace freezing up, as has been mentioned before, is considerably increased."

When United States Bureau of Mines research recorded quantitative measurements of hearth and bosh reactions certain principles were proved which must apply to all coke blast furnaces:

1. The major percentage of silicon (Si) contained in iron ore from the furnace is reduced from silica (SiO_2) and enters the furnace between the plane of initial flux and a plane about $2\frac{1}{2}$ feet above the tuyeres (just above the combustion zone).

2. Since combustion of coke and carbon is confined to a relatively small zone adjacent to the tuyeres, the ash released with carbon combustion is not available for assimilation by slag above the tuyere zone.

3. Since coke ash slag constituents are largely acids (SiO_2 , Al_2O_3) sufficient bases (CaO, MgO) must be carried through the bosh to flux the ash acids where released. Inevitably, with part of the silica in the mix being reduced to supply silicon for the iron, the presence of bases for fluxing the ash acids, chemical composition of the slag in any furnace is more basic at its stage of formation just above the tuyere zone than it is in the initial stage of formation, before any silicon reduction, or in the melting stage after coke ash assimilation. Generally, when bases predominate in slag its melting temperature will be higher than when acids predominate. Because of these proved operating principles Totzek's observations regarding slag melting temperature are proved.



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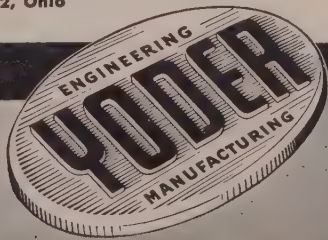
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ones and are not due to use of
gen-enriched air for blast.
as means for correcting the ill
ects from the use of 30 per cent
more oxygen in the blast the
zek patent specifications advo-
e the following:

1. "According to one important
ature of the invention these diffi-
lties in the operation of a blast
nace with blast of increased ox-
en content are overcome by in-
ducing a gaseous medium cap-
e of reacting exothermically
h oxygen, such as carbon mon-
ide, besides the oxygen into the
yeres in such a way as to enable
oxygen and carbon monoxide to
x with each other at the outlet
the tuyeres and, if possible, to
act with each other.

2. "Introduction of carbon mon-
ide into the tuyeres of the blast
nace as provided by the inven-
on leads to a temperature drop in
ont of the tuyeres and besides,
t as an important effect, leads
a considerable extension of the
sing or oxidation zone in front
the tuyeres as compared with
e extent of the fusion zone which
formed when blast highly en-
ched with oxygen is introduced
rough the tuyeres into the hearth
the blast furnace without the ad-
dition of carbon monoxide gas."

To effect the foregoing described
onditions the specifications pro-
ose to increase the number of
uyeres and their arrangement:

"In the sense of this invention,
e rule may be applied that the
umber of tuyeres provided in the
earth, when blast considerably
riched with oxygen is used, must
e chosen in such a way that the
omparatively small fusion zones
hich are formed in front of the
uyeres in the hearth touch each
ther and that there is a continu-
us annular zone of fusion in the
earth round the so-called dead
an."

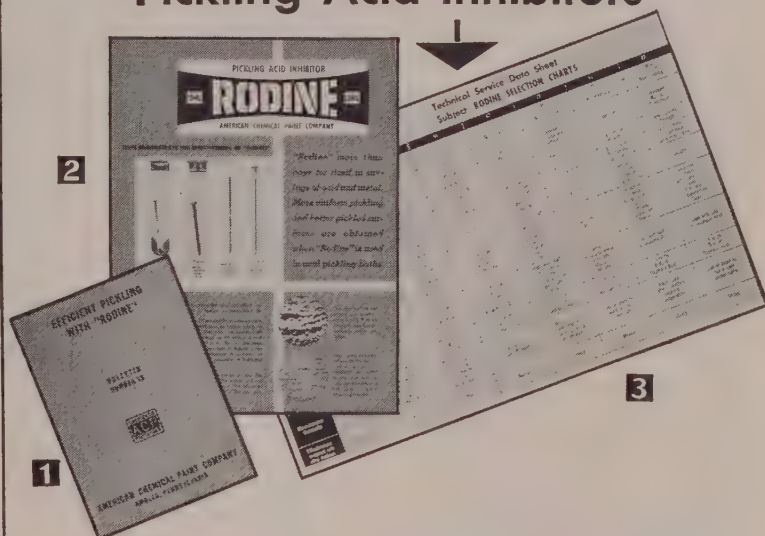
Introduction of carbon monoxide
CO) gas through the tuyeres with
blast without first preheating it to
he blast temperature would re-
duce blast temperature and ther-
mal economy gained thereby.
source of monoxide gas is not
specified but whatever the source
its introduction into the blast be-
fore the stoves is ruled out because
of the well-known disintegrating
action of CO upon hot stove brick.
However, these observations belong
n the commercial phase of furnace
operation and are not strictly a
part of this discussion.

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technical phase of the subject the benefits expected from the introduction of auxiliary gas is a drop in the temperature in front of the tuyeres and an extension of the so-called fusion zone. This end is to be favored with spacing of the tuyeres so there is a continuous annular zone of fusion around the furnace.

The so-called dead man is a central core of stock beyond the dimensions of the extended annular fusion zone. From the premise that the problem to be solved by Totzek's operation is one of high volume and not one of temperature, the means suggested by him and his solution are futile.

With addition to the number of tuyeres and application of more pre-ide gas in the manner described in the patent specification states:

"In the sense of this invention it is of no fundamental importance with a blast furnace whose hearth is designed according to the invention, how the blast furnace is formed above the hearth, i.e., above the bosh and the shaft. Any suitable design of these parts of a blast furnace may be used, if it ensures a regular downward movement of the charge. According to

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WHERE OTHER STEELS
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STRESSPROOF was selected for this transmission pinion gear for the Norge washing machine—made by NORGE Division of Borg-Warner Corporation.

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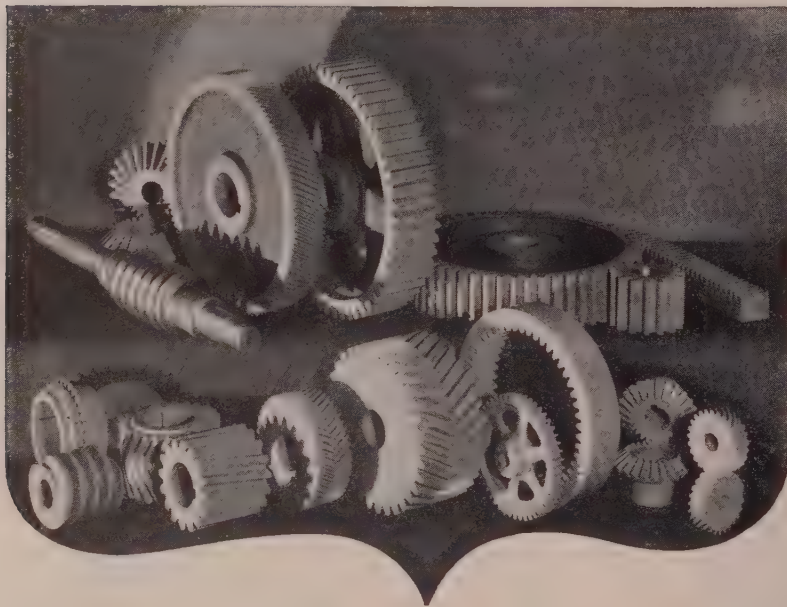


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the present invention, the upper portion above the hearth may be formed accordingly as required for certain contemplated operating conditions of the blast furnace, in a relatively tall stack may be provided above the bosh, so that a relatively low temperature of blast furnace gas at the upper outlet of the furnace may be attained or the stack may be shortened to a higher temperature of the blast furnace gas at the upper end of the blast furnace thus being allowed

In the sense that blast is applied at the hearth of a furnace, so constructed that raw stock will be charged above the hearth and so off the coke combustion zone from the atmosphere, it is of fundamental importance to recognize the basic facts:

1. Development of blast furnace design over a period of six centuries has given consideration to the relationship between shaft and bosh and hearth dimensions.

2. So long as coke carbon is oxidized in a confined area where the products of combustion must pass through a mass of incandescent coke there will be the same combustion reactions, and the same limitation to heat unit generated per pound of carbon oxidized, has existed for six centuries. Although the sequence of the combustion reactions was not proved and brought to light until comparatively recent years the fact of their prior existence is fundamental.

3. Division of the furnace which has the lesser productive capacity will govern productive capacity of the combined divisions.

4. Rate of coke carbon oxidation determines the rate of stock travel through the furnace. If the rate is faster than preparation principles will permit, first the shaft operation and, secondly, the bosh and hearth operation will become overloaded beyond their capacity function.

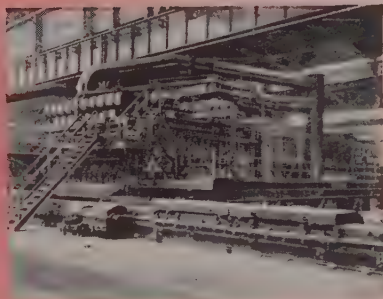
In the light of these four items the relationship between shaft and bosh and hearth dimensions is of ways of fundamental importance to blast furnace design. If a furnace having dimensions of normal relationship could not prepare stock for smelting with the stock travel rate of Totzek's operation, certainly a low-shaft furnace could not do it. Requirements for correcting the Totzek phenomenon are:

1. An increase in the generation of heat units.
2. An increase in the heat absorption rate by stock.
3. Equitable division of the heat

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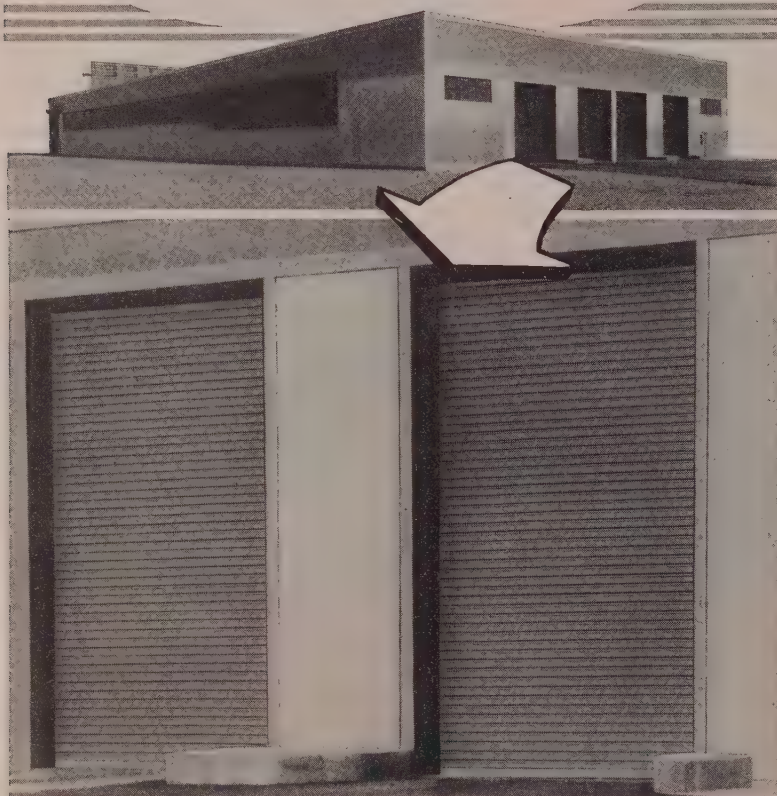


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Turbojet Target

An Air Force sergeant readies the Q-2 pilotless target plane for flight at Holloman Air Development Center, Alamogordo, N. Mex. The turbojet craft is designed to simulate performance of piloted jet planes, but is less than half the size of a modern fighter. This view shows swept wings, entry and Fairchild J-44 power plant.

between shaft work and boiler and hearth work.

However, the use of additional tuyeres, and of auxiliary gas introduced into the furnace with the blast, in attempts to provide uniform dissemination of temperature in a zone adjacent to the tuyeres does not change the basic principles governing carbon combustion at the tuyeres. Therefore, the hearth design recommended by Totzek cannot generate any additional heat units per pound of carbon burned, or provide means of equitable division of heat units between the shaft and the bosh of hearth operations. Since the heat absorption rate for each class of blast furnace raw materials is governed by natural laws, which are determined by chemical and physical properties of the materials, Totzek's design of hearth cannot change them.

Subject Undergoing Study—Apparently, the introduction of auxiliary gases into the blast furnace is being given consideration in the field of research, with the end in view of the use of blast furnace gas for the synthesis of hydrocarbons. This consideration

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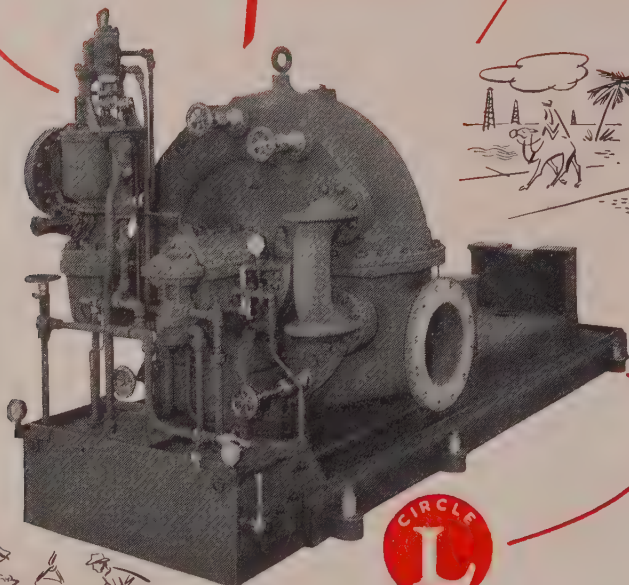
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may have influenced preparation of the United Nations' technical report. Some of the Totzek patent specifications and claims indicate this ulterior purpose:

"Whether a blast furnace with a tall or with a low stack is to be used also depends on the composition of the blast furnace gas required. If a blast furnace with a tall stack is used the indirect reduction mentioned before attains considerable extent and the blast furnace gas produced contains comparatively much carbon dioxide, whilst on the other hand the consumption of solid fuel diminishes. If, however, a blast furnace with a low stack is to be, or is being employed the carbon dioxide content of the gas leaving the furnace is comparatively low and the gas may be used for chemical reactions, e.g., for the synthesis of hydrocarbons from carbon monoxide and hydrogen. If much carbon dioxide is contained in the gas it must be more or less removed before the synthesis of the hydrocarbons, e.g., by scrubbing the blast furnace gas with water under increased pressure. It is obvious that such difficult operation may be eliminated if a low stack blast furnace is used and consequently a gas poor in carbon dioxide is produced."

For the ulterior purpose just cited the patent specification proposes, in addition to the use of carbon monoxide gas to:

"Return a part of the gases leaving the top of the blast furnace to the tuyeres to use it as carbon dioxide gas as well, e.g., gas produced in a special gas producer possibly using finely divided fuel."

Use of various combinations of hydrocarbon gases for synthesis purposes are described as certain to support the recommended change in furnace design:

"In any case, the addition of hydrocarbons, similar to the addition of carbon monoxide and hydrogen results in a dilution of the oxygen in the hearth causing the extremely high temperature near the tuyeres to decrease and a more uniform distribution of heat in the hearth while extending the zone of fusion and oxidation correspondingly."

Based upon operating principle the introduction of auxiliary gases into the furnace, in the manner described or otherwise, would be detrimental to furnace operation and operating economy.

The foregoing analysis is offered in support of the statement that the low-shaft furnace design re-

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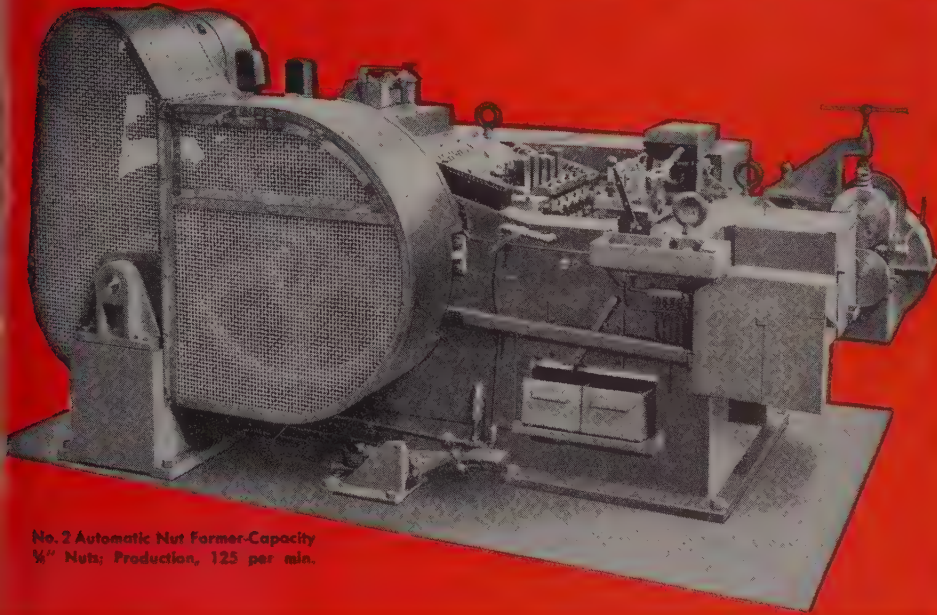


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WF-2

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recommended in the United Nations technical report,¹ and the hearth design of the Totzek patent, with either a low-shaft or a high-shaft furnace, are both basically impractical in the technical phase of furnace operation.

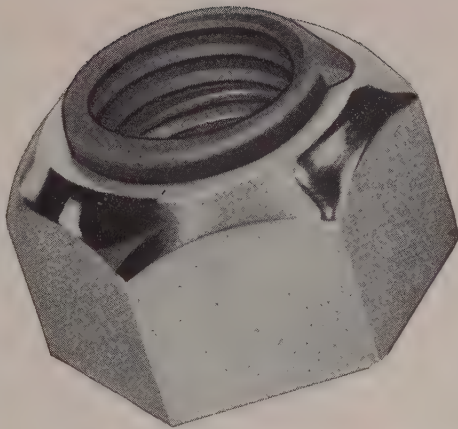
(To be continued)

¹ Technical report on "Possibilities of Development in the Production of Iron" prepared for the United Nations Economic Commission of Europe, Geneva, July 1952, by Prof. Robert Durrer, Zurich Polytechnic and Director of the Louis de Roll and Steel Works, Switzerland. An abstract of Prof. Durrer's title was presented in STEEL, Sept. 22, 1952, page 172.

Transistors Produced in West

Point contact transistors will be in full production and available for industry in June of this year, according to Hydro-Aire Inc., Burbank, Calif. The firm licensed to manufacture transistors by Bell Telephone Laboratories approximately a year ago, reports it will be the first western source.

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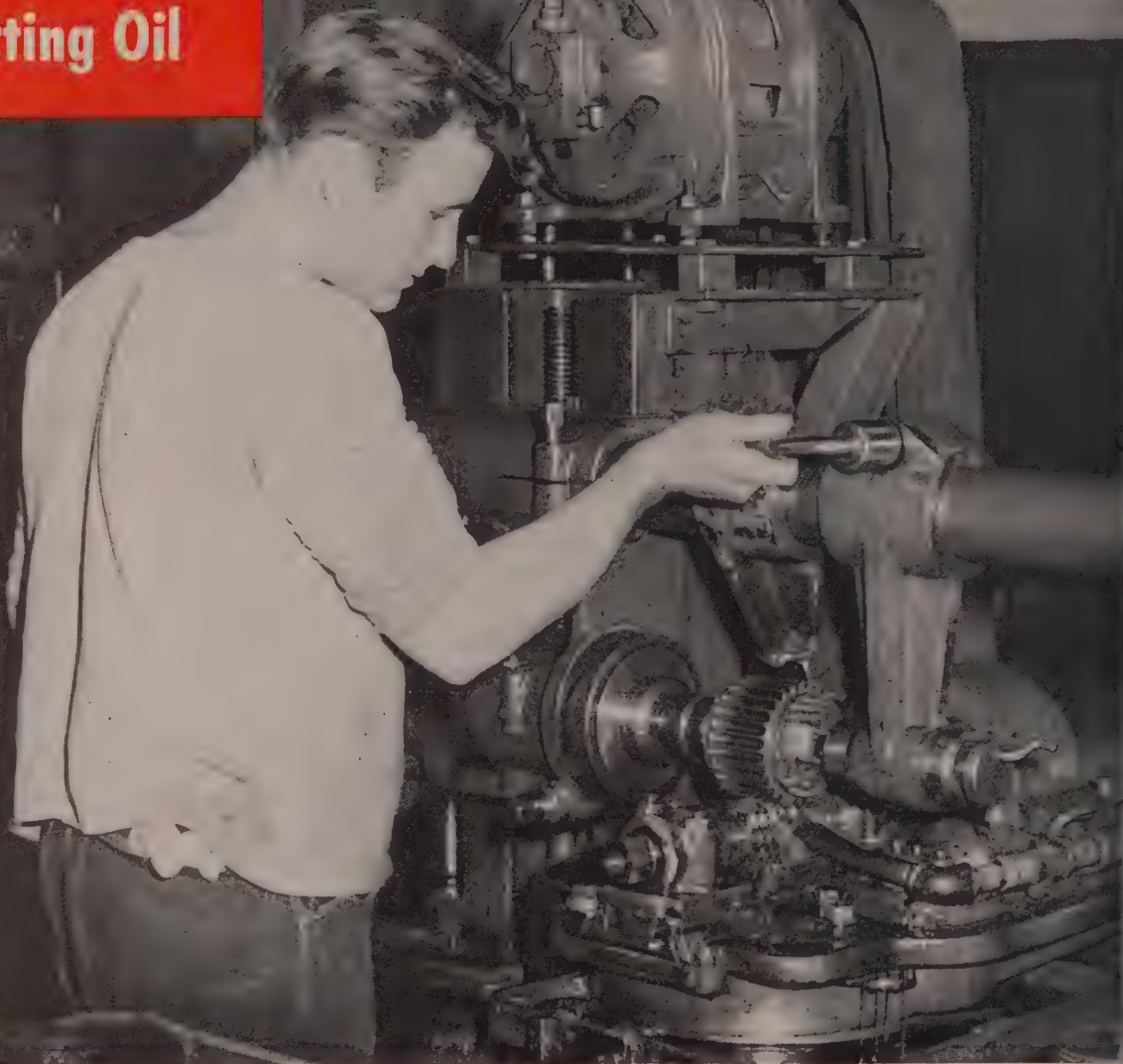
With Security it takes only one nut to hold the job. Just put it on like an ordinary nut. The Security retainer holds it in place and the nut body takes the load. Ask for more complete details. Let us tell you how it's made.



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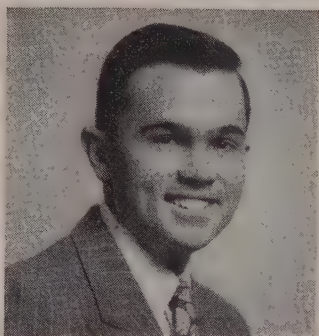
● The Gear Products Company, St. Louis, Missouri, tried various cutting oils for the hobbing of door latch spur gears from a free machining steel. With the best of the oils, an average of only 600 pieces could be produced before hobs required sharpening.

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What's YOUR problem?

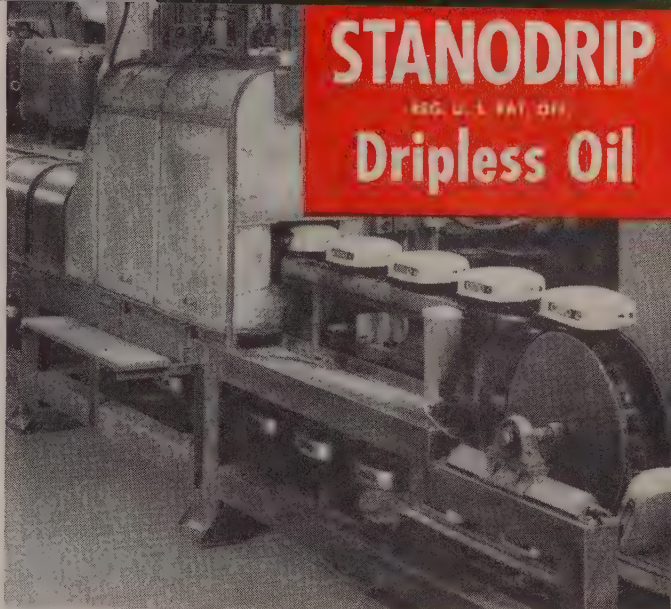


Fred H. Moulton, lubrication specialist in Standard Oil's St. Louis office, worked closely with the Gear Products Company to help them get significantly greater tool life on the hobbing job described at the left.

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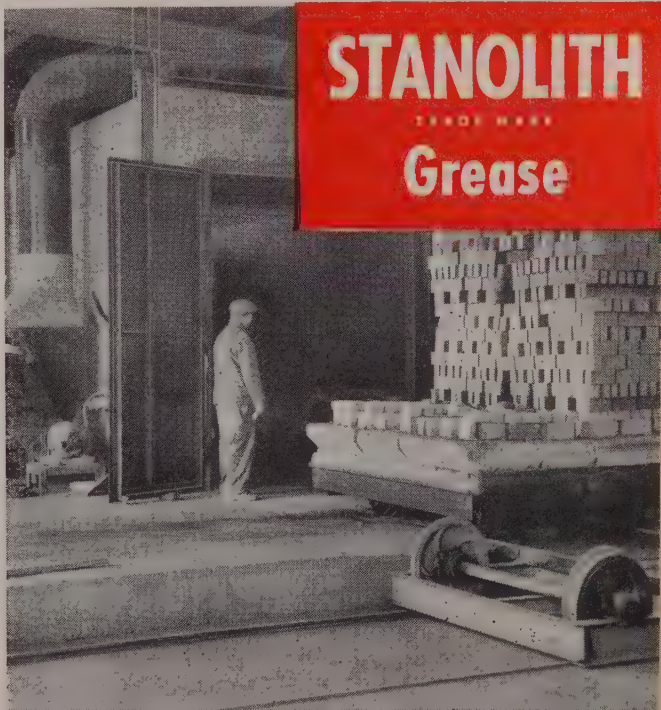
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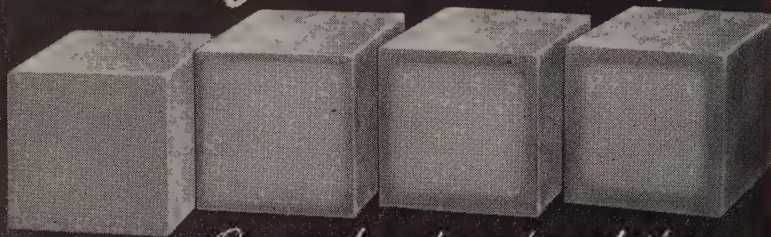
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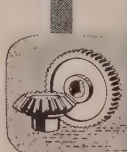
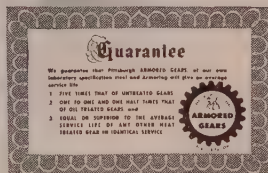
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—Page can draw
the Wire**

Tell us the way you want it. We'll follow your specifications.

Cross-sectional areas up to .250" square; widths up to $\frac{3}{8}$ "; width-to-thickness ratio not to exceed 6 to 1.

*Wire or
Write Today*

**PAGE
WIRE**

ACCO



**PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE**

Monessen, Pa., Atlanta, Chicago, Denver, Detroit,
Los Angeles, New York, Philadelphia,
Portland, San Francisco, Bridgeport, Conn.

horizontal rapid traverse and feed through a special bronze nut and forged steel screw along the bed for a distance of 30 feet. Weight of column and saddle on the ways is relieved by springs.

Vertical Travel: 13 Feet — Cast iron saddle mounted on the column side has vertical travel up to 13 feet. Vertical traverse and feed is obtained through a vertical screw. The saddle case encloses complete gearing for all traverse feed and tool motions. Hand levers, located conveniently on the outer case, control sliding gears.

Intricate Contour Broach

BROACHING setup developed by Colonial Broach Co., Detroit, permits use of standard broaching machines for broaching intricate internal contours of aircraft engine parts.

The six identical contours between internal lobes on the part are broached in two passes—three alternate contours in the first pass, the remaining three in the second. A two-station fixture is necessary to facilitate locating from offset holes in the part. The part is shifted to the second fixture, which is shuttled in broaching position for the second pass.

Built-up Broach — Another interesting feature is use of a built-up broach incorporating inserted broach sections. The machine is a standard 15-ton, 66-inch stroke pull-down single ram machine. Multiple guide shoes guide the broach above and below the part. These shoes contacting grooves in broach during vertical travel insure high dimensional accuracy.

Twelve dowels in the fixture, six above and six below, engage six holes in the six lobes in the part. Complete support of the six lobes thus is provided while the part is being broached, holding the thin walled projections to effectively prevent any distortion during the broaching operation.

Limit Switch Control — The side shuttling fixture has a central opening through which the broach is returned after each pass. All movements of the shuttle are controlled and interlocked by limit switches, and operated hydraulically by the machine's hydraulic system.

Machine goes through a broaching cycle and returns automatically. It is then reactual for the second pass to make the second fixture is loaded in correct position for the pass of the broach.

No Cracks at High Stress

DEVELOPMENT of an iron powder metal having improved ability to withstand high stress without cracking is announced by Chrysler Corp.'s Amplex Division. A. J. Langhammer, division president, reports the product is several times the ductility of previous iron powders and may have possible many new uses for structural material.

Mr. Langhammer says Oilite physical properties comparable to mild carbon steel, such as SAE



DUCTILE IRON POWDER
... pressure maximum: 70,000

1010, 1020 or 1030. He points out that iron powders for regular use withstand pressures of about 35,000 psi, but pressure maximum reaches 70,000 psi with the new product.

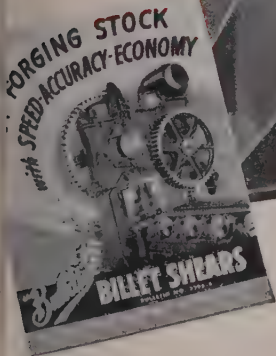
Applications — Good ductility and strength make it applicable for finished machine parts such as gears, cams, brackets and lever arms according to the division. While retaining some porosity, the powder product is not intended for lubricating applications.

Parts are produced in a manner similar to the division's other metal powder work. An iron powder mixture is fed into a briquetting press and formed into exact shape

Buffalo

FOR HIGH-PRODUCTION BILLET SHEARING

SQUARE
CLEAN
CUTS—
no "smears"



More and more firms are reducing their cost of forging blanks with "Buffalo" Billet Shears. Shearing speeds are fast—up to 30 cuts per minute, with automatic hold-downs and feed tables. Blank ends are square and clean with no "smears" or notches, because the knives penetrate only $\frac{3}{16}$ ", localizing a sharp vertical fracture. Porosity is easily detected. For better forging practice, start with a "Buffalo" Billet Shear. Sizes up to 10" rounds and 9" squares. Write for Bulletin 3295.

Buffalo

MACHINE TOOLS

BUFFALO FORGE COMPANY

158 MORTIMER STREET

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

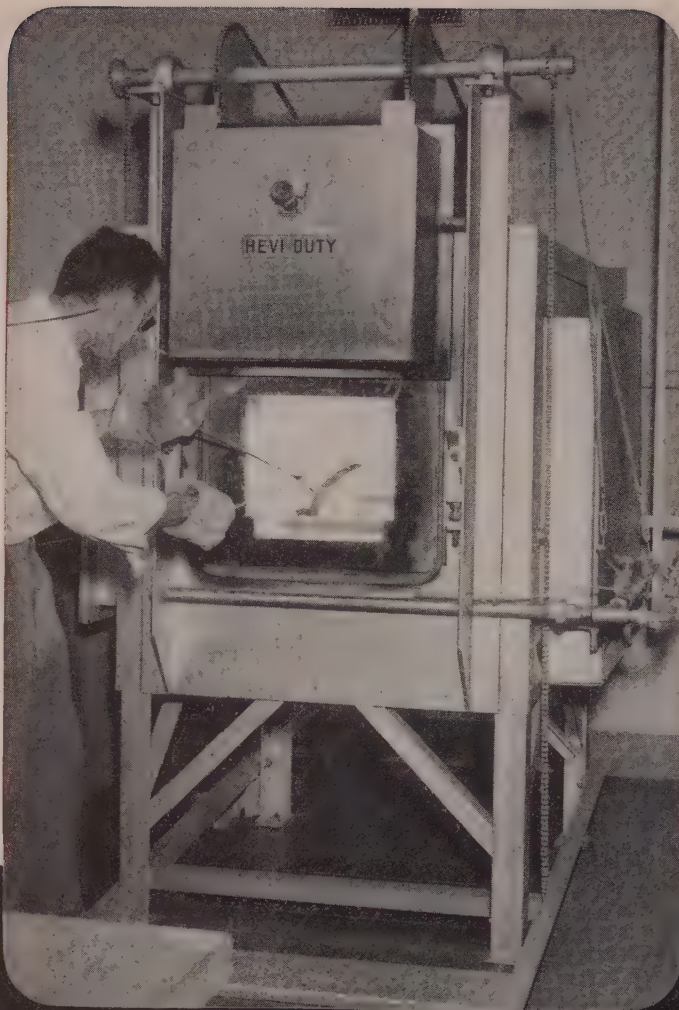
DRILLING

PUNCHING

SHEARING

CUTTING

BENDING



Production Heat Treating Techniques are Determined in HEVI DUTY FURNACES

A large automotive and ordnance manufacturer uses Hevi Duty high temperature furnaces in its metallurgical laboratory for determining production heat treating cycles.

HEVI DUTY

HEVI DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively
Dry Type Transformers Constant Current Regulators

These furnaces provide the uniform heat needed in this important work. Temperatures are accurately controlled to 2600° F. For day in day out production or precision laboratory work rugged Hevi Duty furnaces will meet your requirements. Write for bulletin IND-741 today.



Drive-Shaft Balancing

Piasecki Helicopter Corp. uses a 10 foot bed length balancing machine to balance drive shaft assemblies dynamically to within 1 inch-ounce at 1000 rpm. Built by Bear Mfg. Co., Rockland, Ill., the machine also gives assemblies a running static balance within 1 inch-ounce at 660 rpm. Time saved varies from 50 to 60 per cent.

and size. Briquette is heat-treated to fuse metal particles, then finished again in a press to eliminate the necessity of machining.

The product can be plated by any of the normal processes. It can also be hardened by direct quenching, or carburized and hardened.

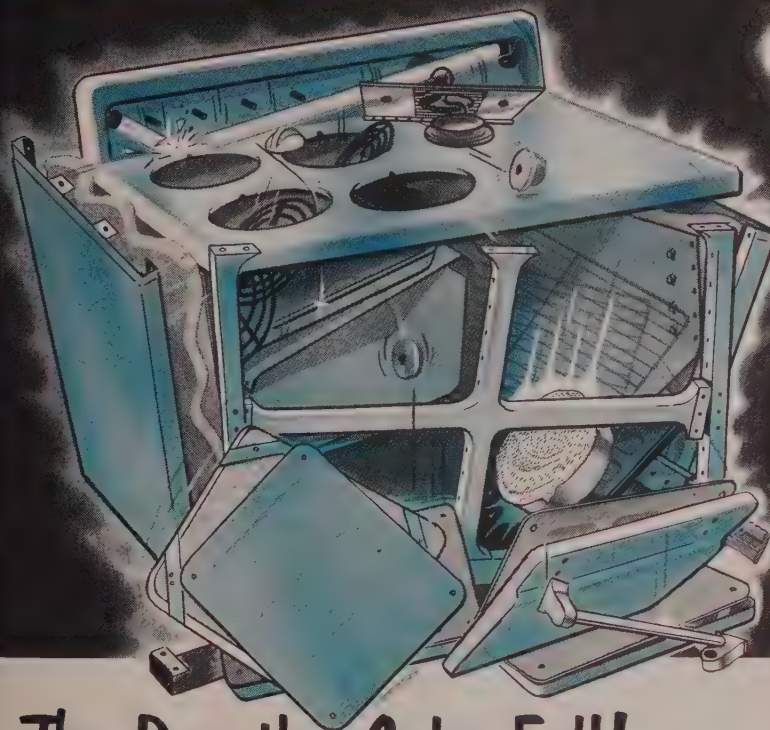
Putting Ideas to Work

A mechanism for "Putting Ideas to Work" is outlined in a booklet issued by Battelle Development Corp., Columbus, O.

The booklet points out ideas on technical development serve no one until they are put to work. Yet it is frequently difficult for a freelance inventor or for research workers in universities and industry to find a way for developing their creative ideas.

The corporation is an instrument for putting such ideas to work. It is a wholly owned subsidiary of Battelle Memorial Institute, owning 226 United States and foreign patents, and 270 patent applications. It also has an interest in 35 other patents and patent applications. Several of the products and processes covered by the patents are available for licensing.

Lamson LIFE WITHOUT FASTENERS



The Day the Cake Fell!

Suppose all the nuts, bolts and screws suddenly removed from a sparkling range. A great deal more than a cake would fall—as the illustration above dramatically shows.

Fasteners *are important*—and worth the time and care you take in selecting those that are “just right” for your product. Lamson & Sessions is currently supplying most of the appliance manufacturers with nuts, bolts and screws—each type engineered to meet individual requirements.

Regardless of the product you manufacture; it will pay to take a critical look at the fasteners you are now using and ask yourself these questions:

Can I save money by replacing a “special” with a “standard”? Or will the use of a “special” simplify production, thereby, saving time and perhaps materials?

Remember, whatever your problem, to check with Lamson & Sessions—one of the few manufacturers offering a *complete line* of fasteners teamed with expert engineering service.









The LAMSON & SESSIONS Co.

1971 West 85th St. • Cleveland 2, Ohio

Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

FOR PROMPT DELIVERY AND HELPFUL SERVICE,
ORDER FROM YOUR LAMSON DISTRIBUTOR



 <p>MACHINE SCREWS Ideal for blind or hard-to-reach places.</p>	 <p>PLUG NUTS Ideal for blind or hard-to-reach places.</p>	 <p>TAPPING SCREWS Choice of round, pan, truss, flat oval, hexagon and Phillips heads.</p>	 <p>CAP SCREWS “1035” Hi-Tensile Heat-treated steel.</p>	 <p>SQUARE AND HEX MACHINE SCREW NUTS Semi-finished, hot pressed, cold punched.</p>	 <p>LOCK NUTS Economical, vibration proof. Can be used repeatedly.</p>	 <p>COTTER PINS Steel, brass, aluminum and stainless steel.</p>	 <p>“1035” SET SCREWS Cup point type, hardened and heat-treated.</p>
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TINNED... FOR PROTECTION

...in preparing and processing
foods... beverages...
and petroleum products



Why are kitchen strainers, tea strainers, flour sifters, french fryers, automatic dishwasher baskets and many other kitchen tools made of Reynolds *tinned* wire cloth?

Because tinning means resistance to rust and tarnish resulting from contact with milk, water and atmospheric gases.

Tinned wire cloth is also resistant to phosphoric acid, ammonia, carbon tetrachloride, etc.; and substances present in motor fuels and other petroleum products.

And, wherever high speed soldering is a factor—as in electrical production—Reynolds tinned wire cloth is a natural choice.

Whether your products are used in the kitchen, dairy, food processing and preservation, or the beverage, petroleum, electrical industries—you'll be interested in Reynolds Wire Cloth. And, tinning is only *one* of the many special needs demands that *Reynolds Wire Cloth* is or can be made to meet. Consult Reynolds engineers. No obligation.

Reynolds WIRE CLOTH

protects performance

REYNOLDS WIRE DIVISION, NATIONAL-STANDARD CO., DIXON, ILLINOIS

Divisions of National-Standard Co.

ATHENIA STEEL...Clifton, N. J. Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD...Niles, Mich. Tire Wire, Fabricated Brails and Tape
WAGNER LITHO MACHINERY...Jersey City, N. J. Metal Decorating Equipment
WORCESTER WIRE WORKS...Worcester, Mass. Round and Shaped Steel Wire, Small Sizes



CALENDAR OF MEETINGS

31-April 2, The Magnesium Association: International magnesium exposition, National Armory, Washington. Association address: 122 E. 42nd St., New York 17. Secretary: Martha I. Hanson.

7-9, Steel Shipping Container Institute: Annual meeting, Biltmore hotel, Palm Beach, Fla. Institute address: 600 Fifth St., New York 20. Secretary: L. B. Miller.

8-10, Society of the Plastics Industry: Pacific Coast conference, Last Frontier Hotel, Las Vegas, Nevada. Society address: 10 W. 44th St., New York 36. Executive president: William T. Cruse.

9-10, Malleable Founders' Society: Marketing development conference, Cornell University, Ithaca, N. Y. Society address: 100 Commerce Bldg., Cleveland 14. Managing director: Lowell D. Ryan.

9-11, Lead Industries Association: Annual meeting for members, The Greenbrier, Sulphur Springs, W. Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

12-15, American Supply & Machinery Manufacturers Association: Annual meeting conference booth program, Hotel Columbus, Miami, Fla. Association address: 1000 Clark Bldg., Pittsburgh 22. Secretary: Kennedy Hanson.

12-16, Electrochemical Society Inc.: Annual spring meeting, Hotel Statler, New York. Society address: 235 W. 102nd St., New York 25. Secretary: Dr. Henry B. Lin-

13-15, International Acetylene Association: Annual spring meeting, Hotel Biltmore, Mont. Association address: 30 E. 42nd St., New York 17. Secretary: H. F. Rein-

13-15, American Society of Lubrication Engineers: Annual meeting and exhibit, Hotel Statler, Boston. Society address: 343 Dearborn St., Chicago 4. Secretary: James P. Youngclaus Jr.

14-15, Westinghouse Machine Tool Election Forum: Annual session, Hotel Statler, Buffalo. Information: E. F. Grapes, Technical publicity, Box 2278, Pittsburgh 30.

14-16, Conveyor Equipment Manufacturers Association and University of Illinois Department of Engineering: Conveyor institute, University of Illinois, Champaign, Ill.

16-17, American Machine Tool Distributors Association: Spring meeting, Netherlands hotel, Cincinnati. Association address: 1900 Arch St., Philadelphia 3. Secretary: Thomas A. Fernelly Jr.

16-17, The Wire Association: Regional meeting, Stacy-Trent hotel, Trenton, N. J. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Wynn.

16-19, Grinding Wheel Institute: Spring meeting, The Homestead, Hot Springs, Va. Institute address: 2130 Keith Bldg., Cleveland 15. Manager: Hunter-Thomas Association, c/o F. A. Peterson.

18-19, Packaging Machinery Manufacturers Institute: Spring meeting, Hotel Sheraton, Chicago. Institute address: 342 Madison Ave., New York 17. Secretary: Helen L. Patton.

19-23, American Hardware Manufacturers Association: Spring meeting, Hotel Adlon, Dallas. Association address: 342 Madison Ave., New York 17. Secretary: Arthur Faubel.

20-22, Metal Powder Association: Annual meeting and exhibit, Hotel Cleveland, Cleveland. Association address: 420 Lexington Ave., New York 17. Secretary: Robert Ziegfeld.

20-22, AIME Blast Furnace, Coke Oven and Raw Materials Committee and National Iron and Steel Committee: Annual conference, Hotel Statler, Buffalo. Institute address: 29 W. 39th St., New York 18.

20-23, American Gas Association: National Packaging Exposition: Navy Pier, Chicago. Association address: 330 W. 42nd St., New York 36. Information: Donald G. Wynn.

April 20-23, National Screw Machine Products Association: Spring meeting, Hotel St. Moritz, New York. Association address: 2860 E. 130th St., Cleveland 20. Secretary: Orrin B. Wernitz.

April 20-23, Society of Automotive Engineers: Aeronautic production forum; national aeronautic meeting, and aircraft engineering display, Hotels Governor Clinton & Statler, New York. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

April 21-23, Caster & Floor Truck Manufacturers Association: Spring meeting, Edgewater Beach hotel, Chicago. Association address: 27 E. Monroe, Chicago. Secretary: H. P. Dolan.

April 22-23, American Institute of Steel Construction Inc.: Spring engineering conference, Detroit Engineering Society Bldg., Detroit. Institute address: 101 Park Ave., New York 17. Executive vice president: L. Abbett Post.

April 25, American Society for Metals, Indiana Chapters: Annual spring symposium, Purdue University, W. Lafayette, Ind. Information: A. D. Carvin, Joselyn Stainless Steels, Ft. Wayne, Ind.

April 27-28, Copper & Brass Research Association: Annual meeting, Drake hotel, Chicago. Association address: 1420 New York Ave. NW, Washington 5. Corresponding secretary: Mrs. Elizabeth Dyer.

April 27-May 8, British Industries Fair: Castle Bromwich, Birmingham, and Earls Court, London, Eng. Information: Larry Nixon, 575 Madison Ave., New York 22.

April 29-May 1, Radio-Television Manufacturers Association: Electronic Components Symposium, Shakespear Club, Pasadena, Calif. Association address: 777 14th St. N.W., Washington 5.

May 4-6, National Small Businessmen's Association: Annual meeting, Hotel Mayflower, Washington. Association address: Evanston, Ill. Vice president: A. W. Kimball.

GLOBE Seamless GLOWELD Welded

- Resistance to Corrosion
- Strength at High Temperatures
- Resistance to Oxidation at High Temperatures
- Ease of Fabrication

TYPICAL ANALYSIS AND TYPES:

302	309S	316Cb	330	410
302B	309Cb	317	347	430
304	310	321	403	443
308	314	329	405	446
309	316	INCONEL*—NICHROME**		

*Registered U.S. Trade-mark

**Trade-Mark Reg. U.S. Pat. Off. D-H Co.

Globe produces more than 26 standard analyses of stainless steel tubes — also special analyses when required. Because varying analyses have widely varying service characteristics, Globe will make recommendations only after careful study of your particular problem or application.



GLOBE

specialization...

meets your exact requirements in

STAINLESS STEEL TUBES



Write for Bulletin 333 — Corrosion and Heat Resisting Steel Analyses Chart — a valuable reference tabulation of stainless steel analyses as produced by various manufacturers.



Piercing, rolling and reduction of seamless tubes is closely monitored from this control room — typical of the highly specialized equipment in the Globe mill.

SIZE RANGE:

Globe seamless stainless steel tubing — sizes ½ inch to 6 inches O.D., pipe sizes ½ inch to 6 inches, standard, extra strong and double extra strong weights. Gloweld electric welded stainless steel tubing — sizes ¼ inch to 5 inches O.D. Standard weight pipe (schedule 40) sizes ½ inch to 2 inches — lightweight pipe (schedule 5 and 10) ½ inch to 4½ inches.

TOLERANCE RANGE:

All stainless tubing furnished to standard A.S.T.M. specifications unless otherwise specified to suit your particular application requirements.

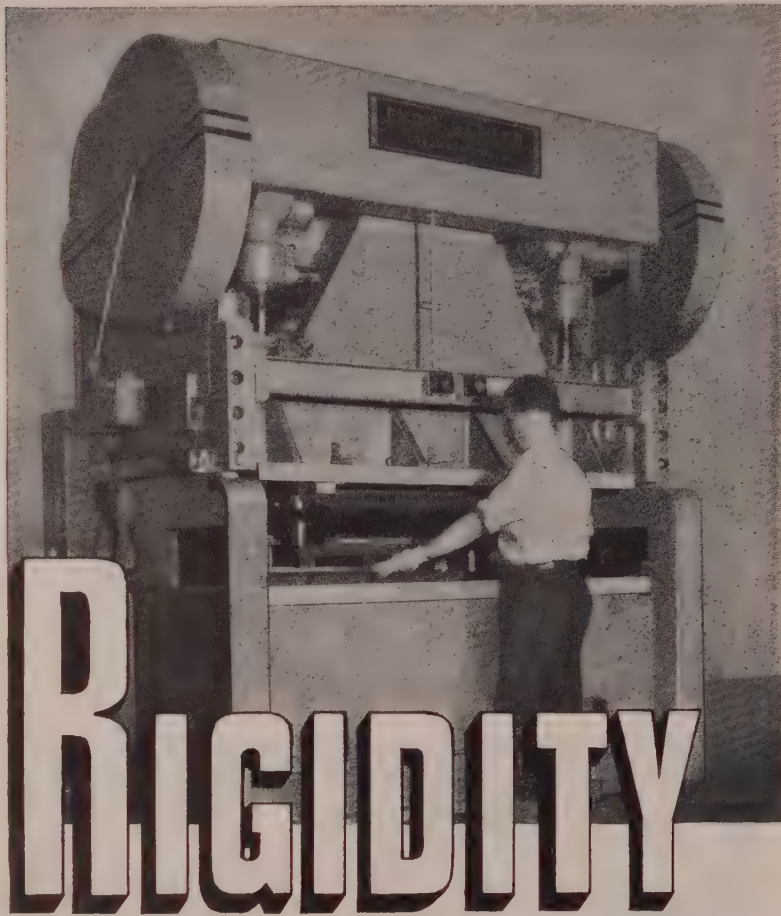
Globe specialization gives you uniform high quality . . .

Precision checks — and re-checks — at every stage of production insure Globe stainless steel tubes that meet your exacting specifications. For more than thirty years, specialization in production of steel tubes has kept all Globe research, engineering and mill operations. Write for the Globe Stainless Steel Tubes catalog.

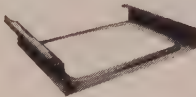
GLOBE STEEL TUBES CO.
Milwaukee 46, Wis.

Chicago • Cleveland • Detroit • New York
Philadelphia • St. Louis • Denver • Houston • San Francisco • Glendale, Cal.

Producers of Globe seamless stainless steel tubes — alloy-carbon seamless steel tubes — Gloweld welded stainless steel tubes — Globeiron (high purity ingot-iron) seamless tubes — Globe welding fittings.



AND WIDE BED AREA MAKE THE **BATH**
PRESS TYPE BRAKE IDEAL FOR BLANKING ...
PIERCING ... SHALLOW DRAW



THE RIGIDITY of the Bath Press Type Brake is evidence of its high standard of construction. With speeds of 45 or 60 strokes per minute, it has many outstanding advantages such as Overload Protection, Pneumatic Clutch-Brake, End Feeding, Serial Operation etc.

The one piece welded frame, with closed side housings, makes for perfect die alignment, which means stamping, bending etc. to very close measurements. Slide areas are large, about four times those in ordinary bending presses, adequate for most of the difficult blanking, stamping and punching operations. Ram and bed working areas are flush with the forward housing and easily reached by the operator.

Under a heavy production schedule the efficient and economical operation of the Bath Press Type Brake increases production and offsets losses incurred elsewhere.

For further information and specifications on the Bath Press Type Brakes write for this catalog.

THE CYRIL **BATH** COMPANY
MANUFACTURERS of METAL FORMING MACHINERY
6972 MACHINERY AVE. • CLEVELAND 3, OHIO



R. LESLIE MULLEN
... asst. to president of Lehigh Structural Steel Co.

(Continued from Page 78)

Don McLeod western representative with offices in Los Angeles.

R. Leslie Mullen, vice president of Lehigh Structural Steel Co. and its subsidiaries, Allentown, Pa., made assistant to the president.

Elmer T. Meyer was appointed assistant manager, agricultural division, Crucible Steel Co. of America, Pittsburgh. He formerly was purchasing agent and director of traffic for B. F. Avery Division, Minneapolis-Moline Co.

A. W. Jacobson was made manufacturing manager for pile driving aircraft at Boeing Airplane Co., Seattle. W. E. Ramsden was appointed experimental department manager.

Ira E. Johnson was named general manager of the new Chrysler engineering proving grounds at Chelsea, Mich., and Arnold. Irving was made chief engineer and assistant to the general manager. Wallace E. Zierer will be supervising experimental engineering.

M. J. Kilhoff succeeds Edward Horstkotte, retired, as manager of the locomotive and car equipment laboratory at General Electric Co., Erie, Pa., Works.

Dr. William E. Cass was made manager of the new product development laboratory of General Electric Co.'s chemical division, Pitt-

WHICH OF THESE QUALITIES DO YOU WANT MOST IN CUTTING FLUID?

.. LUBRICITY

—to withstand pressure and reduce friction

.. VERSATILITY

—one cutting fluid to do 90% of all jobs

.. GERMICIDAL PROPERTIES

—no skin sores, no rancid odors

.. FILM STRENGTH

—which gives you longer tool life

.. COOLER WORK

—which can be handled bare-handed

.. LOWER COSTS

—less than 8¢ a gal., in the machine

YOU GET THEM ALL WITH

ANTISEP

ALL-PURPOSE BASE

—not a mere water soluble oil, but a fortified concentrate scientifically developed to give you "100 oils in one!"

E. F. HOUGHTON & CO.
PHILADELPHIA • CHICAGO • DETROIT • SAN FRANCISCO



Ready to give you
on-the-job service ...

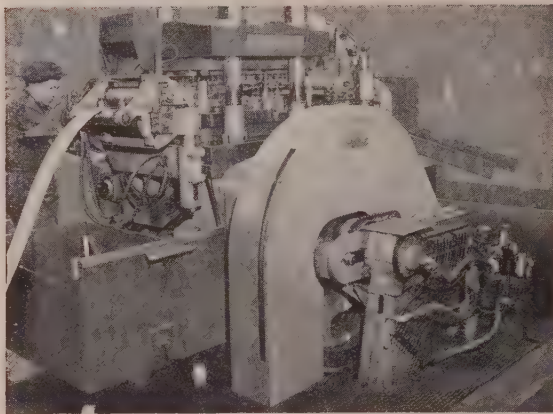
PROMINENT AUTOMOTIVE MANUFACTURER MAKES 25,000 PIECE TEST... *Result...*

ANTISEP by wide margin!

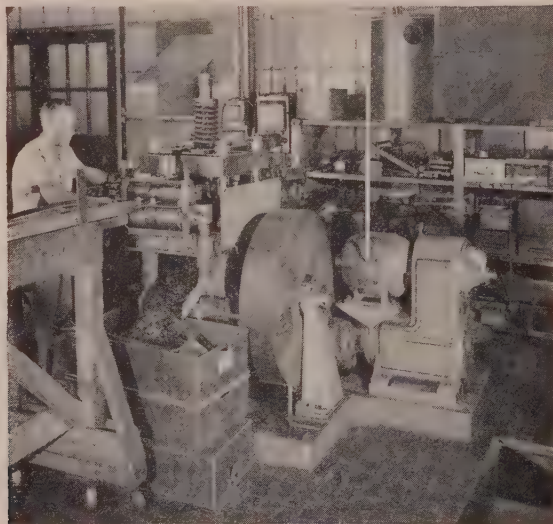
Test consisted of broaching 25,000 pieces of SAE 1138 steel at a feed of 18 feet per minute, on a Cincinnati Broach. Antisept was diluted 15 to 1 with water. Competitive Oil "A" was used in a mix of 18.5% oil, 81.5% Paraffin; Oil "B" was also mixed with Paraffin on a 23.7% to 76.3% ratio. The cost comparison below shows Antisept's exceptional economy...

	OIL "A"	OIL "B"	ANTISEP BASE
Coolant	\$45.70	\$54.20	\$14.80
Sharpening and Setup	26.80	27.49	26.26
Tool	139.69	137.55	134.76
Total Cost	\$212.19	\$219.24	\$175.82

Modernize Metal Stamping with Henry & Wright Dieing Machine



In Chrysler's Highland Park plant (above), Henry & Wright Dieing Machines are used to make fluid coupling fins and torque converter impeller blades. At Knapp-Monarch (below), Dieing Machines produce rotor and stator laminations complete-per-stroke.



IT PAYS **3** BIG WAYS

1. *Combine operations -- use progressive stamping more efficiently, for more parts*
2. *High quality work at high speed*
3. *High speed plus long die life*

In Plant After Plant Henry & Wright Dieing Machines are setting new record high in the number of pieces produced per hour, in work quality and die life. A high production tool, this unique press is proving that it can do as much work as five to ten conventional presses. It provides both high speed and long die life—a combination unavailable in any other press.

Only the best is good enough

Capacities of Henry & Wright Dieing Machines range from 25 tons to 2500 tons pressure. Our catalog—available upon request—describes machines up to 400 tons. Larger capacities are custom built to requirements. Write Henry & Wright, 461 Windsor St., Hartford 5, Conn..



HENRY & WRIGHT
Division of Emhart Mfg. Co.



JOHN STOLARZ
... rejoins DeWalt Inc.

Mass. He has been manager of the organic chemistry section of the GE research laboratory.

Stolarz rejoins DeWalt Inc., Lancaster, Pa., subsidiary of American Machine & Foundry Co., as industrial sales manager. Formerly general sales manager, he left DeWalt in 1949 to become a divisional manager of Delta Power Tools Division, Rockwell Mfg. Co., where he served successively as sales promotion manager, assistant general sales manager and general sales manager.

Frank G. Fisher, vice president and assistant general manager, of the H. J. H. Corp., Detroit, was promoted to general manager.

R. Fletcher was made sales manager, welding steels division, of the Pyram Steel Co., Cleveland.

Albert H. Clem was appointed general sales manager, Pennsylvania Salt Mfg. Co., Philadelphia, replacing the late Russell S. Ruler.

Harold Johnson has joined Penlar Grinding Wheel Sales Corp., associated with the Cleveland office.

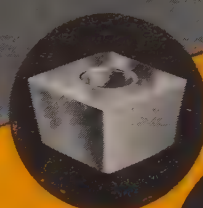
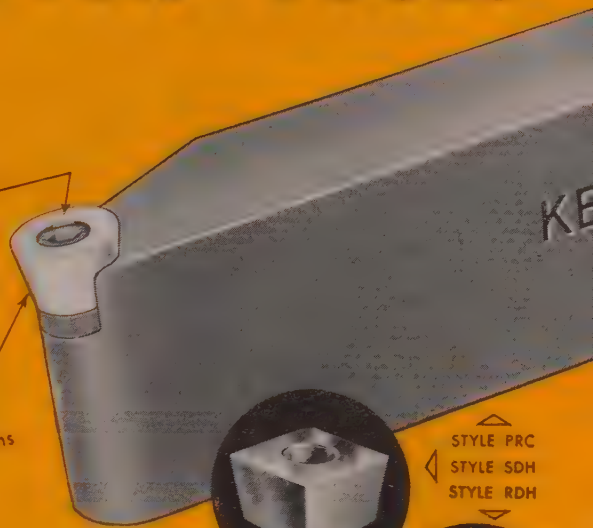
Richard H. Oberholtzer is manager of the Milwaukee district office, Kennametal Inc., to succeed Carl W. Mellock, resigned.

W. M. Strom Mfg. Co., Chicago, elected A. A. Wiser vice president in charge of sales, and Arthur Karst as secretary and a director.

KENNAMETAL "BUTTON" TOOLS

Mounting Screw
permits easy rotation
of insert
without changing
tool setting

Sturdy Kennametal
insert—indexable to
several cutting positions



STYLE PRC
STYLE SDH
STYLE RDH



UNBUTTON Production Tie-Ups

Get acquainted with this new tooling technique that handles jobs ranging from profiling to planing—gets more work done with less carbide, uses simplified tool designs, and greatly reduces grinding expense. Here are typical applications:

PLANING: Machine tool builder reports heavy duty button tools cut time of planing 15-foot gray iron castings from 86 to 41 minutes.

BORING: Car wheel maker records up to 200 wheels bored before set of four heavy duty Kennametal buttons need resharpened.

PRODUCTION JOB: Tractor accessory shop faces to length and chamfers both ends of more than 3600 actuating cylinders with set of three buttons.

Performance reports on these and other "button-tooled" jobs will be sent—or our field engineer will give you complete information—on request. Kennametal Inc., Latrobe, Pa.

KENNAMETAL

CEMENTED CARBIDE TOOLING
THAT INCREASES PRODUCTIVITY



The U. S. Steel Supply team that gives you *personalized service*



...our salesman

puts this team to work for you!

SUPPLYING YOUR STEEL requirements becomes our team objective when you tell your needs to your U. S. Steel Supply salesman. Behind your salesman is a team of technical experts, each one a specialist in his field... and your business receives the attention of every member of the team who can contribute to its progress.

What do you need? Steel? Tools? Special purpose equipment or machinery? Advice on working an unfamiliar type of steel? Help in meeting a pressing delivery date? Give your order to your U. S. Steel Supply salesman. He will see that it gets immediate attention from the U. S. Steel Supply specialists best qualified to serve you.

YOUR "ONE CALL" SOURCE OF STEEL SERVICE

U.S. STEEL SUPPLY



UNITED STATES STEEL SUPPLY DIVISION, UNITED STATES STEEL CORPORATION
HEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. WAREHOUSES AND SALES OFFICES:

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Sales Offices: INDIANAPOLIS • KANSAS CITY, MO. • PHILADELPHIA • PHOENIX • ROCKFORD, ILL. • SALT LAKE CITY • SOUTH BEND • TOLEDO
TULSA • YOUNGSTOWN

UNITED STATES STEEL

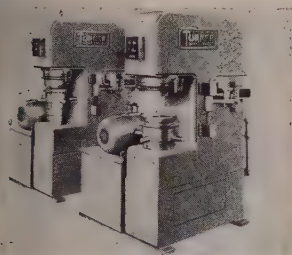
NEW

PRODUCTS and equipment

Reply cards on page 141 will bring you more information on any new products and equipment in this issue

Hydraulic Assembly Press maintains center distances

Accurately maintaining center distances in assembling inner portions of fluid couplings is one function performed by this 50-ton hydraulic assembly press. Ram on the assembly press is set with an indicator, the stroke electrically



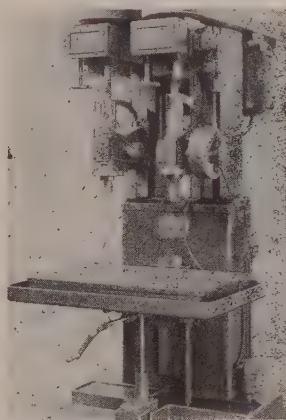
hydraulically controlled so assembly of tree members is maintained accurately. Turner Bros. Dept. ST, 2625 Hilton Rd., Pease Lake, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Heavy-Duty Drilling Machine

Power, hand, hydraulic feed
Power, hand or hydraulic feeds are available for the No. 3 MVB heavy-duty drilling machine. The machine drills holes to 1 1/4 inches diameter in steel or 1 1/2 inches in iron. It has 24-inch swing, capacity for No. 3 or 4 Morse taper from one to four spindles. Power feed has three feed rates, adjustable depth stop and safety clutch. The hydraulic feed has either plain or step-by-step control. A four-speed motor with gears provides eight standard speeds. A single-speed motor, with or without back gears, or a four-speed motor without back gears are

also available. On multispeed machines, all speed changes including back gear shifting, are made instantly without stopping the ma-



chine or the operator moving from position. Leland-Gifford Co., Dept. ST, Worcester 1, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Cam Follower Roller

... stud diameter increased



Built specially to meet heavy duty requirements, this type CTA cam follower roller provides a stud that has large diameter with relation to roller size. Integral flange on the stud makes it possible to increase stud diameter and assures strength demanded in special applications where high speed and heavy load-carrying capacity are essential.

Stud diameter can be specified larger or smaller to fit particular requirements. Stud is case hardened in the bearing section, left

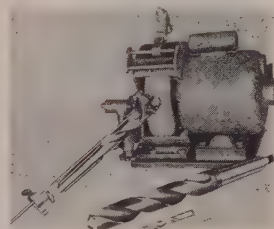
soft on the threaded end to prevent snapping under impact or pressure. Smith Bearing Co., Dept. ST, 23 Bear Tavern Rd., W. Trenton, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Twist Drill Grinder

... two holders take all sizes

Increasing life and efficiency of two-flute twist drills and reducing material spoilage due to imperfectly drilled holes are the functions of the model 200 twist drill grinder. The grinder requires only two hold-



ers to sharpen all sizes of straight or taper-shank twist drills from 1/8-inch to 1 1/2 inches.

An infinite range of point angles for drilling different material types is obtained instantly by a simple one-knob adjustment. Compensation for wheel wear is made automatically. A built-in diamond wheel dresser is standard equipment. Alden Industries, Dept. ST, 1400 Sackett St., Cuyahoga Falls, O.

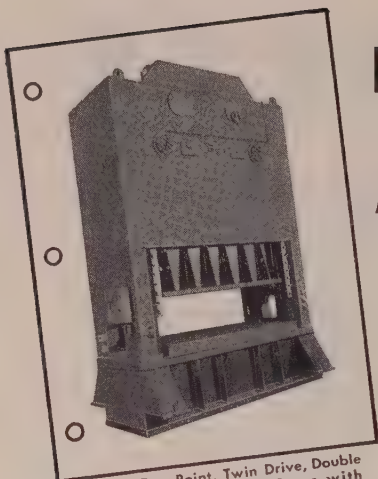
FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Sprocket, Roller Chain Line

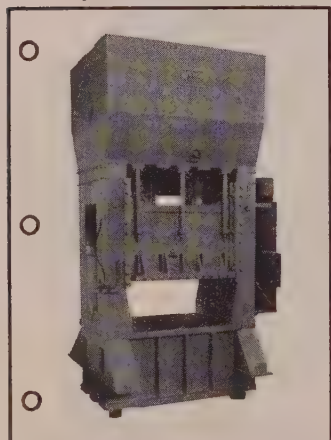
... employs Taper-Lock principle

Off-the-shelf availability to roller chain drives is accomplished with a line of sprockets and roller chain that marks the manufacturer's entry into the roller chain drive field. Instant availability is achieved by

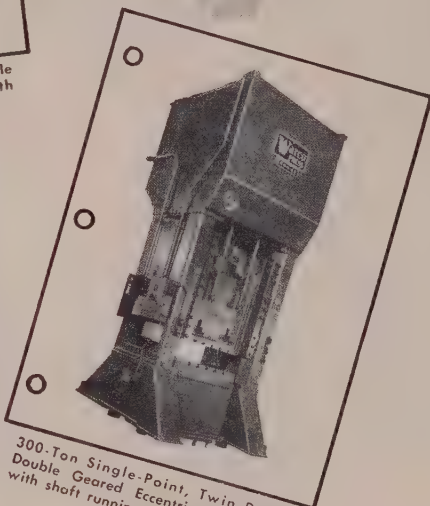
FOUR of the MANY Warco® ECCENTRIC GEAR PRESSES WORKING TODAY



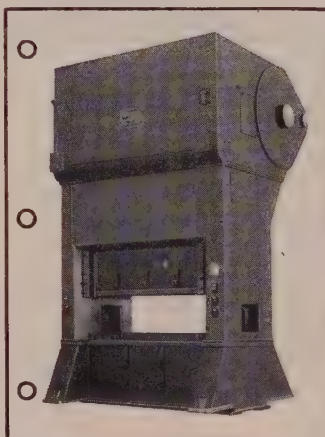
600-Ton Two-Point, Twin Drive, Double Geared Eccentric Gear Press with shafts running front to back.



600-Ton Two-Point, Twin Drive, Double Geared Eccentric Gear Press with shafts running right to left.



300-Ton Single-Point, Twin Drive, Double Geared Eccentric Gear Press with shaft running right to left.



200-Ton Twin Drive, Double Geared Eccentric Gear Press with shafts running right to left.

The new Warco Eccentric Gear bulletin shows above features in detail

Federal
WELDERS®

Warco
PRESSES®

THE FEDERAL MACHINE & WELDER COMPANY

WARREN, OHIO

application to sprockets of the firm's Taper-Lock principle. Result is elimination of sprocket re-boring to fit shafts. Neither is it necessary that shafts be turned and ground to get a tight fit. Sprocket is keyed to the shaft, gripping it with firmness of



shrunk-on fit. But, when a sprocket must be replaced, it comes off easily and the bushing can be re-used.

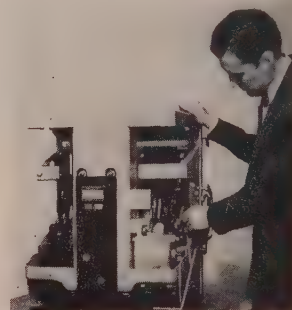
Sprockets are compact, without flange or protruding parts, and will take any make of American standard chain. Dodge Mfg. Corp., Dept. ST, Mishawaka, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Low-Voltage Switchgear Line

... 600-v ac and below

Complete line of low-voltage drawout switchgear—600-v ac and below—makes available standardized compartment construction and new air circuit breakers. Complete



equipment, with whatever circuit breaker is needed, can be made from standardized circuit breaker control-instrument and bus compartment building blocks.

Air circuit breakers can withstand 30-cycle momentary current equal to their interrupting ratings of 15,000 to 100,000 amp. This makes it possible to have fully selective tripping with all breakers applied up to their full interrupt



Everybody gets into the act . . .

That's the way we want it to be, here at Claymont. Because that's the way we make sure that your order for alloy steel gets careful, individualized supervision . . . painstaking attention to every processing detail right from the front office, through our laboratories, down to the men who roll your steel.

Let us show you how our *personal touch* assures you of alloy steels that are truly tailored to your specialized requirements.

Write or call Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Delaware.

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado

THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California

WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New York • Philadelphia

CANADIAN OFFICES: Toronto • Winnipeg • Edmonton • Vancouver

CLAYMONT STEEL PRODUCTS

PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



YOU'RE SAFE WITH THE NEW SUPER-TOUGH

WILLSON SAFETY HAT

THE NEW WILLSON SAFETY HAT is entirely new in design, material and method of manufacture . . . tough as metal and more resilient! Here are some other outstanding features of the new Willson Super-Tough* Safety Hat . . .

streamlined contour—deflects objects more effectively and provides a greater safety "pocket" inside.

new suspension design—adjustable "hammock" headband is suspended *inside* at 6 points. No exposed rivets or lacing—no holes through hat.

comfortably cool—space between headband and shell provides ample air circulation for wearer.

moisture resistant—practically 100% waterproof and resists many caustics and acids.



Passes all required tests with an extra margin of safety!

Write for your copy of the new bulletin describing the Willson Super-Tough* Safety Hat.

*trademark



WILLSON PRODUCTS, INC., 233 Washington Street, READING, PA.

NEW PRODUCTS and equipment

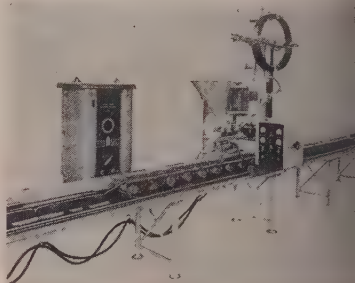
ing ratings. Continuous current ratings range from 15 to 4000 am General Electric Co., Dept. S Schenectady 5, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Automatic Welder, Positioner

. . . rapid, nonmanual operation

Automatic welder and positioner is an addition to the Sight Feeder line, for use in fabrication and repair of equipment by electric welding. Features include provision for low and high voltage welding, high frequency starting and



stabilization. Welding can be linear or cross-bead on flat or circular shapes, continuous or in sequence.

Rotating spindle is adjustable vertically to accommodate a large work size range. Angular positioning for welding idler and roller flanges, crusher mandrills and similar applications is done by hydraulically controlled elevating device. Sight Feeder Generator Co., Dept. ST, W. Alexandria, O.

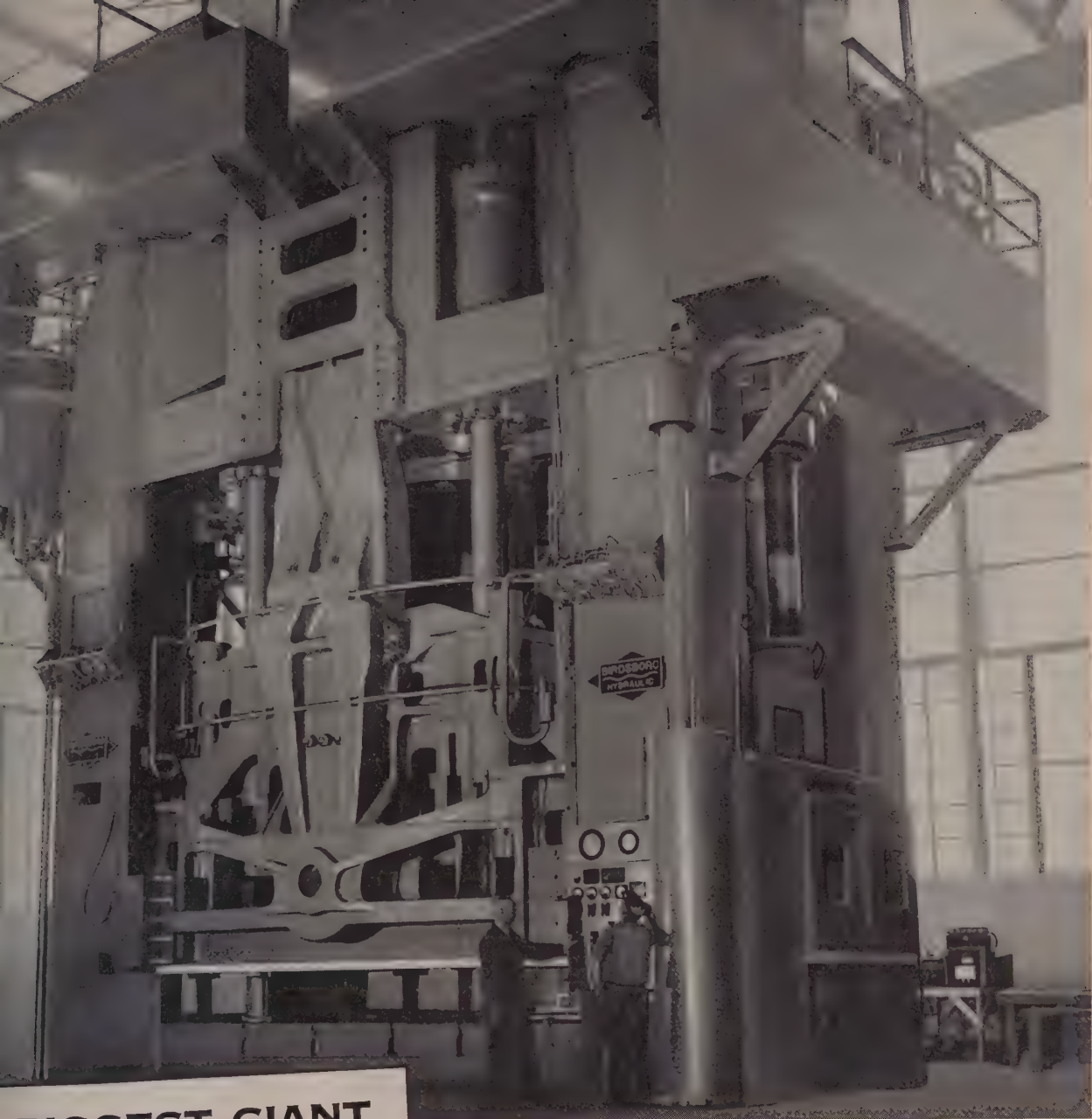
FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Copper-Clad Hardenable Steel

. . . low-cost conductive parts

Copper-clad steel is a composite metal consisting of a layer of medium carbon steel with a relatively thin layer of electrolytic copper clad to one or both sides. Called Confex, it is a highly conductive spring material providing excellent ductility for extreme forming and retaining good spring properties after heat treatment. Primary advantage is relatively low cost.

Flexibility in electrical conductive properties is gained by varying copper layer thickness. With 10-80-10 thickness ratio, the product has a conductivity of about



**BIGGEST GIANT
OF THEM ALL!**

• This new 8,000-ton hydraulic press, designed and built by BIRDSBORO, is located at Lockheed Aircraft Corporation's factory in Burbank, California. It is the largest of its kind in the world. With a total height of 48 feet, of which 12 feet is foundation imbedded in the floor, this huge machine enables Lockheed to produce larger individual parts with heavier sections of new, tougher metals demanded by tomorrow's high speed aircraft. The operator of this giant press controls a force equivalent to the weight of a battle cruiser as he forms components of tough aluminum alloy a half-inch thick and up to ten by 30 feet in size. The giant press is part of Lockheed's five-million dollar expansion program.

Designed & built by

BIRDSBORO

BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA.

**HYDRAULIC
PRESSES**

HPL 1-53
Offices in Birdsboro, Pa.
and Pittsburgh, Pa.

Designers and builders of: Hydraulic Presses • Steel Mill Machinery • Crushing Machinery • Rolls • Special Machinery • Steel Castings

30 per cent when compared with solid copper. General Plate Division, Metal & Controls Corp., Dept. ST, Attleboro, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Braided Sling

... has reuseable fitting

An eight-part braided sling features a thimble fitting known as Pin-Lock thimble. It is attached by pins and is readily removable

for reuse. A. Leschen & Sons Rope Co., Dept. ST, 5909 Kennerly Ave., St. Louis 12, Mo.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Adjustable Wrench

... for inserting valves

Designed for insertion of valves in cylinders, this adjustable valving wrench is constructed of tough steel alloy case hardened. The handle can be fitted with either

of two jaws: One adjustable from 15/16-inch to 1 3/16 inches; the other from 1 3/16 to 1 7/16 inches. A 1-inch steel pipe extension attached to wrench governs amount of torque applied. Superior Valve & Fittings Co., Dept. ST, Pittsburgh, Pa.

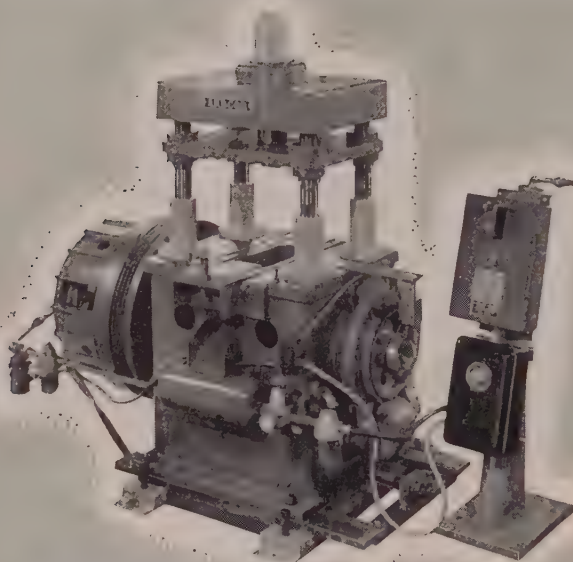
FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Low-Lift Walkie Truck

... more power, less space

Short headroom and 6000-pound handling capacity are two factors that make this JackLift truck applicable for operations where ramps must be navigated. Redesigned to become more compact for work

ARDCOR *Engineered* MEANS BETTER COLD-ROLL FORMING



35 TON PRESS EQUIPPED WITH AIR CLUTCH AND AIR RELEASE SPRING-SET BRAKE

A complete package press that offers a high degree of dependability and accessibility. Available as either a "flying cutoff" or high speed dieing machine. Up to 700 strokes per minute. Write for details.

American ROLLER DIE CORPORATION
20700 St. Clair Avenue • Cleveland 17, Ohio



in confined areas, its increased power is gained by use of a compact pound-wound General Electric traction motor. It has two speeds for forward and reverse and all controls are in the handle head.

The motor has continuous 1 1/4-hp rating with overload capacity of more than twice this figure. All operating parts are placed where they are easy to service; there are no under-truck adjustments. Lewis Shepard Products Inc., Dept. ST, Watertown, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Barrier-Type Safety Guard

... protection regardless of die

Maximum operator safety regardless of die used and without sacrificing press efficiency is the function of this barrier-type punch press guard. Simple, flexible design provides for dropping vertical rods through any pair of prelocated holes in horizontal guard plates to set up a protective cage around the die area. Number of rods depends on size of bolster plate.

Virtually any shaped contour can be formed by varying ro-



STRETCH OUT YOUR STAINLESS, TOO

There *are* ways to stretch out your supply of stainless.

For example, you may be using a grade or finish of stainless that is in extreme demand when another similar one, not as tight, could do the job adequately.

Our metallurgical staff and stainless fabricating specialists are ready to help you look into this matter and to advise you on more readily-available types of stainless that will do a satisfactory job. Feel free to call on us for this specialized help.

CRUCIBLE

first name in special purpose steels

STAINLESS STEEL

53 years of *Fine* steelmaking

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.
304 STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

SELECT A

Sterling

THAT FITS YOUR JOB!



**TUBULAR
STEEL FRAME**

(Above)

Model D3 1/2 S Maximum Capacity 3 1/2 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

(Right)

Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

DEALERS: Want to sell quality wheelbarrows? You can on our non-exclusive basis. Write for details.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

**12 SPOKE
STEEL WHEEL**

**PNEUMATIC
TIRED WHEEL**

**IMMEDIATE
SHIPMENT**



**WOOD HANDLE
BARROW**



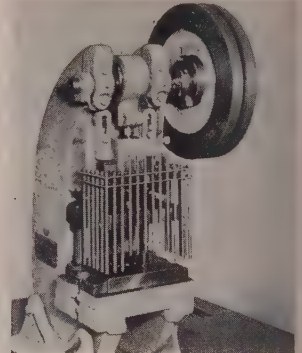
Look for this Mark of
STERLING Quality

Sterling WHEELBARROWS

A 5714-1/4-R2

NEW PRODUCTS and equipment

height and position in the guard plates. Rods are held at desired heights by small clips. To change the pattern for a new die requires



only seconds. Guard openings can be arranged to permit parts insertion or ejection from the die. Benchmaster Mfg. Co., Dept. ST, 1835 W. Rosecrans Ave., Gardena, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Electric Fork Lift Line

... 1000-4000 pound class

Duolift rams with leakage return and class H silicone insulated motors are two features available in a line of electric fork lift trucks covering the 1000 to 4000-pound load class. Hydraulic safety fuses and good maintenance accessibility are



other design elements incorporated. Benefits include maximum protection against damage from overheating, protection of ram plungers, low maintenance cost and assurance of locked load position if line ruptures.

All models are offered with either the Duolift rams, providing full free lift, or monolift, which

Why Lift Extra Tonnage?



Walker Lifting Magnet operates with valuable saving of electrical energy . . . high ratio lifting magnet gives maximum lifting with minimum weight. Walker's advanced design insures more payload per lift . . . gets into corners . . . reduces supplementary hand work.

LESS WEIGHT — MORE POWER!

O. S. WALKER CO. Inc.
WORCESTER 6, MASSACHUSETTS

units 19¼-inch free lift before
total height begins to increase.
Models have full telescopic lift
height of 132 inches. Automatic
Transportation Co., Dept. ST, 149
87th St., Chicago 20, Ill.
MORE DATA—CIRCLE REPLY CARD NO. 13

Shaper-Type Slat Conveyor
handles hot bulky products

Hot billets and similar heavy,
bulky products can be handled effec-
tively on this power-driven
shaper-type slat conveyor. Con-
densed material is pushed by bars
that are clamped to a pair of
power-driven chains which travels
between the side rails of the conveyor



me. These bars, located at 48-
inch centers, push the material
over a stationary, full-width roller
table.
Both roller ends are equipped
with lubricated bearings that roll
in a case-hardened raceway. The
entire ball-bearing housing is
pressed into the end of the roller
table and held in position by a spring
lock that provides quick and easy
assembly. Sage Equipment Co.,
Dept. ST, 31 Essex St., Buffalo,
N.Y.
MORE DATA—CIRCLE REPLY CARD NO. 14

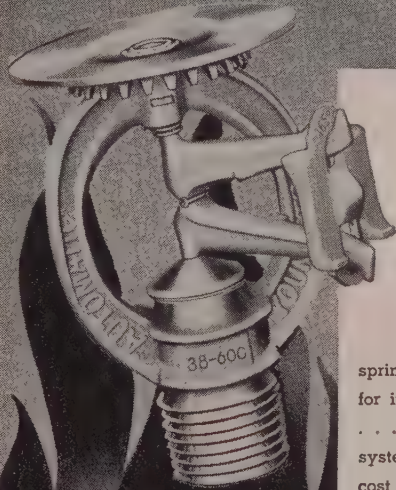
Tube End Reducer
connects smaller size tube

This tube end reducer is used
to convert any Ferulok fitting into
a combination size unit, permit-
ting connection of a smaller size
tube. It is inserted into the tube
connection end of the regular fit-
ting and attached with the nut
and ferrule of that fitting. The
other end of reducer is coupled to
smaller size tubing with reducer's

Sure Fire Killer!

'Automatic' SPRAY Sprinkler

UL LISTED AND FM APPROVED



YOU should specify
"Automatic" SPRAY Sprinklers for
your new building now in the plan-
ning stage or an old one, soon to
be renovated. For here is a com-
pletely new fire fighting device
that provides far superior protection
than can conventional approved
sprinklers. They're recognized as preferred
for installation in all types of occupancies
... both concealed and exposed piping
systems. Yet, "Automatic" SPRAY Sprinklers
cost no more than old style heads.


Ask any fire insurance underwriter
about "Automatic" SPRAY Sprinklers, the
"sure fire killer." He knows the facts of fire
and what's needed for maximum safety.

You can afford no less than the
best. Get "Automatic" Sprinkler
FIRST IN FIRE PROTECTION.

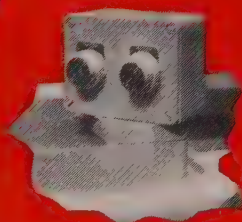
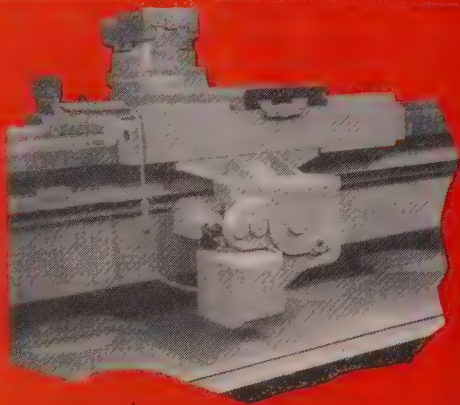
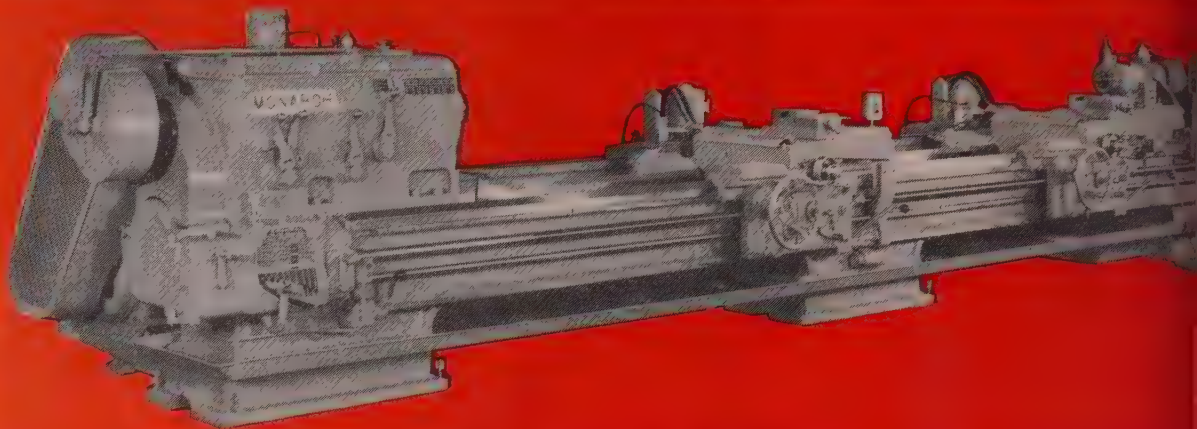
"AUTOMATIC" SPRINKLER
CORPORATION OF AMERICA
Offices in principal cities of
North and South America

New literature available on request

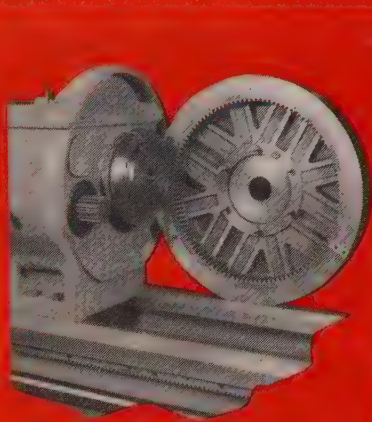
"Automatic" Sprinkler



CORPORATION OF AMERICA • YOUNGSTOWN, OHIO



PLUS CONTROL. A smoothly functioning rapid traverse in either direction is furnished by unit mounted at rear of machine (left). Push button controls on front carriage wing (right) give instant response only when depressed. Standard on 25" Model N and 32" Model NN, optional on 20" Model M.



PLUS POWER. For heavy chip removal from large diameter work the optional face plate drive headstock is a "must" (left). If insufficient, even delivery of power under load. Drive may also be taken through spindle. Steady rests, great capacity and strength are provided. This one (right) will take work 26" to 38 1/2" diameter.

Monarch 25" Model N with long bed. Note optional dual carriages—Ideal for peak production on long shafts and gun barrels. Perfect performance is noted with two tools turning simultaneously. Air-Gage Tracer Controls can be supplied for both carriages (as shown), either carriage, or neither. Monarch-Keller controls can also be furnished.

BIG Monarchs

Powered like a Percheron



Nimble as a Pony

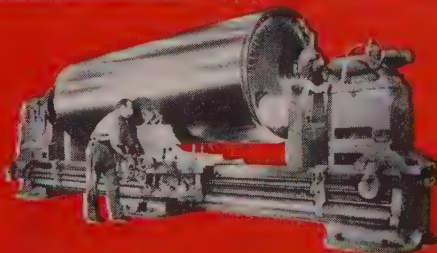
Imagine a great steel-muscle Percheron with the instant, spirited responsiveness of a polo pony—and you've got a picture of the Monarch Heavy Duty Lathes. Here are lathes with the size, power and rigidity to hog off heavy cuts from big work—yet built to provide high finish, close accuracy and convenience of operation! Witness the great number of them—both with and without Air-Gage Tracer controls—speeding production of critical jet aircraft parts today.

Here's unequalled strength and versatility within the capacities offered—20", 25" and 32" swings in standard lengths up to 324" between centers. Look at the special features and applications we've found room to illustrate here. Then write for our Booklet #1208—36 pages of data and pictures—for the complete Monarch Heavy Duty Lathe story. We'll send it gladly . . . *The Monarch Machine Tool Company, Sidney, Ohio.*

FOR A GOOD TURN FASTER . . . TURN TO MONARCH

Monarch

TURNING MACHINES



PLUS SWING. For maintenance and repair work—for occasional big parts, light cuts on big diameters, and turning shafts with previously machined large sections, plus swing up to 60" and more can be provided. This Model 5N, shown turning a paper machine drum, swings 84"

nut and ferrule. Parker Appliance Co., Dept. ST, 17325 Euclid Ave., Cleveland 12, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Elapsed Time Indicators

... small in size

Running time indicator series ET-1 for industrial or laboratory application is made in two models: ET-1A counts to 99,999 hours by hours, ET-1B counts to 9,999.9 by

tenths of hours. Series utilizes Bristol Circle B motor. Device is 2 inches in diameter and $2\frac{1}{8}$ inches in depth. It operates on 115 v, 60 cycles. Vocaline Co. of America Inc., Dept. ST, Old Saybrook, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Prong Type Tool

... attach, detach link belting

Brammertool is a prong type tool used to attach and detach

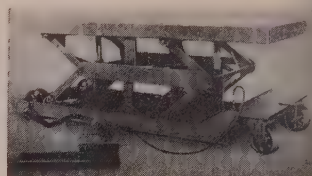
V link belting. A light pressure inserts ends of prongs into standard slots of V links. Another twist opens the slots so that rivet heads can be quickly slipped in or out to make or break connections in belting. Brammer Corp. Dept. ST, 684 Broadway, New York 12, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Portable Sheet-Feeding Table

... capacity: 3 to 10 tons

Heavy sheets can be fed to presses, brakes or shears by this double-ram sheet feeding table, within its 3 to 10-ton load capacity. Although a heavy-duty unit, the table



has swivel casters and smooth-rolling wheels to gain maximum portability in storage loading areas and between machines.

Table has a 36 x 96-inch top to provide easy handling of large sheets. It is hydraulically-operated by multiple-speed foot pump and is also furnished with electric drives. Rack Hydraulic Equipment Corp., Dept. ST, Connellsville, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Fractional hp Magnetic Brake

... self-adjust for wear

Fractional horsepower magnetic brakes for all standard alternating or direct current motors are available with torque ratings of $1\frac{1}{2}$, 3 and 5 pound-feet. Brakes self-adjust for wear, but critical torque



adjustment can be made for precisely timed stops. Units have thermal ratings of 6, 7 and 8 seconds per minute, respectively.

Molded asbestos friction disc

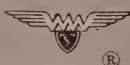
GUIDING LIGHT of INDUSTRY

Cuyahoga's Engineers and Wire Part Craftsmen stand ready to serve you ... ready to guide you with the benefit of over 48 years of peacetime and wartime experience in improving, speeding and simplifying design or operation on all types of Springs, Wire Parts, Wire Forms, Stampings, Assemblies and Snap-Clip Fasteners.

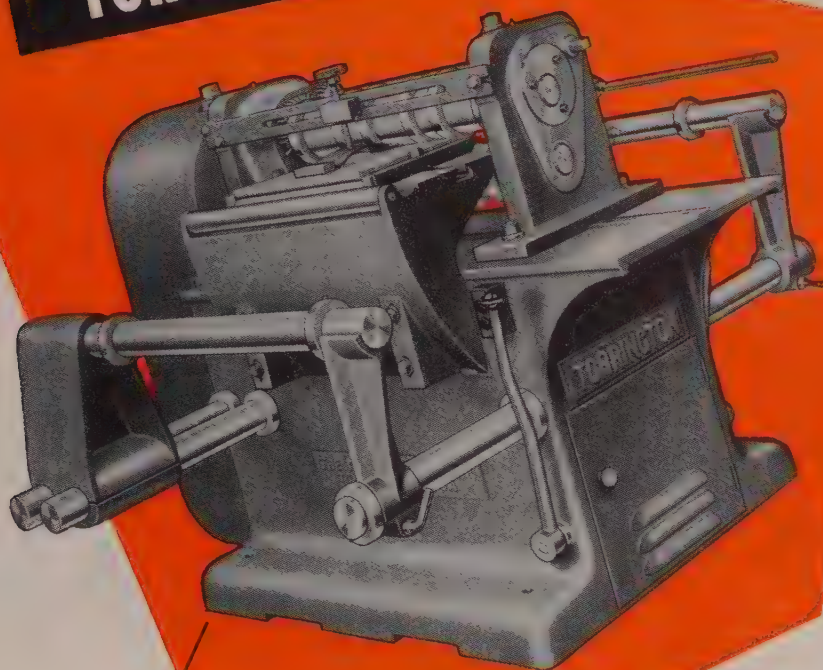


The CUYAHOGA SPRING Co.

10200 BERA ROAD • CLEVELAND 2, OHIO



TORRINGTON SLITTING MACHINES...



FAMOUS FOR YEARS OF CONTINUOUS, DEPENDABLE SERVICE

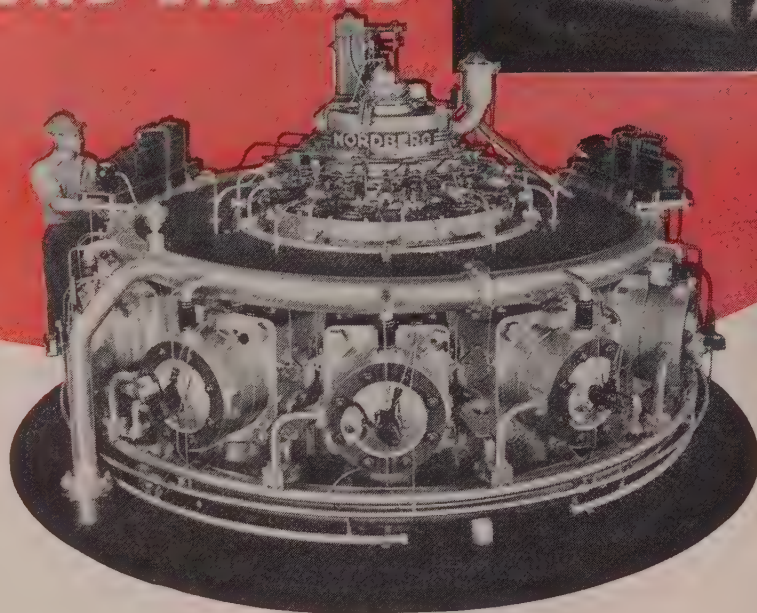
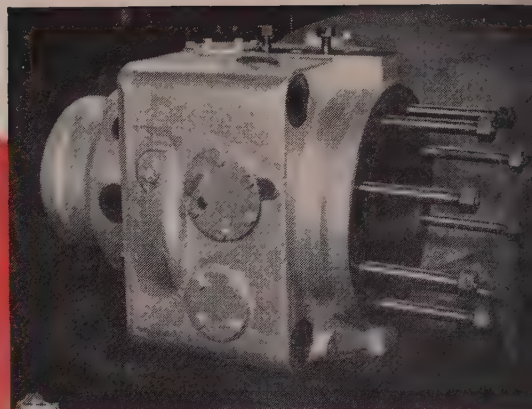
These compact, easily operated machines are especially designed to meet the needs of sheet metal fabricators who require slitters that can be quickly set up to produce any desired combination of cuts on any gauge of metal within their range. The product of years of research, development and experience, Torrington Standard Slitters are famous for continuous, dependable service.

THE TORRINGTON MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT

DESIGNERS AND BUILDERS OF MILL MACHINERY FOR OVER SIXTY-FIVE YEARS

Square Cylinder

FOR A
ROUND ENGINE



another "difficult" casting made easier with **CHATEAUGAY PIG IRON**

● It's one of eleven cylinders on the 1650-HP Nordberg Radial Diesel shown above. And because it's a one-piece casting, complete with built-in water jacket, adjoining light and heavy sections are encountered. Thanks to CHATEAUGAY Pig Iron, however, there are no problems of partially-filled molds or uneven cooling.

CHATEAUGAY—Republic's *exclusive* premium pig that outperforms all other irons—imparts exceptional fluidity to any mix in which it is used. It fills every section of the mold . . . cools

uniformly . . . provides a uniform grain structure that machines readily and economically.

A Republic Pig Iron Metallurgist will be glad to give you the complete story about low phosphorus, copper-free CHATEAUGAY Pig Iron . . . show you how and where it should be used for most effective, profitable results. Write today to:

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

Republic **PIG IRON**

"CHATEAUGAY"
Low-Phosphorus,
Copper-Free

"REPUBLIC"
(Northern)
Foundry, Basic
and Malleable

"PIONEER"
(Southern)
Foundry and Basic



PRODUCTS and equipment

high heat dissipation keep op-
on cool. Design eliminates
oids and mechanical linkage.
ard brakes are fully enclosed
weatherproof; explosionproof
s are available. Dings Brakes
Dept. ST, 4740 W. Electric
Milwaukee, Wis.

ORE DATA—CIRCLE REPLY CARD NO. 19

Treat Furnace Loader

feeds metered quantities

is heat treat furnace loader
matically removes material
a hopper and discharges it
ven and metered quantities into
adless belt-type heat treat fur-
A series of synchronized



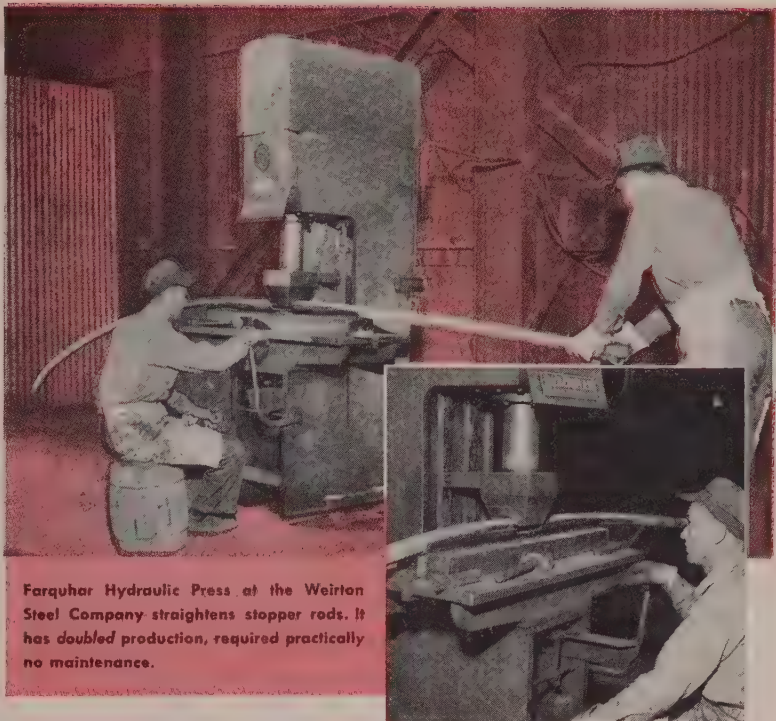
ical-moving pushers, cut on a
egree angle, removes parts
a the hopper, raises them to
next level and causes them to
off by force of gravity.
With this equipment, one man
load from 500 to 4000 pounds
hour of small stampings, forg-
or castings to full furnace ca-
ty for an indefinite run. One
ct of the Man-O-Steel installa-
is to eliminate one or more
okers, reducing production cost
minimizing the human element
furnace heating. Michigan Crane
Conveyor Co., Dept. ST, 115 N.
Kinstry Ave., Detroit 9, Mich.

MORE DATA—CIRCLE REPLY CARD NO. 20

Lighting Combinations

for lift truck, tractors

selection of lighting combina-
s for the manufacturer's fork
trucks and tractors is avail-
e optionally as original equip-
at. Floodlights, tail lights, and
lights are made in varied ar-
gements to meet individual re-
ements. Single switch or



Farquhar Hydraulic Press at the Weirton Steel Company straightens stopper rods. It has doubled production, required practically no maintenance.

Farquhar Hydraulic Press at the Weirton Steel Co.

"eliminates breakage of rods...increases production 100%"

The Weirton Steel Co., Weirton, W. Va., formerly straightened stopper rods with a steam hammer. The operation was slow and resulted in a high percentage of breakage. Seeking a better method, Weirton officials bought a Farquhar Press to speed production. Not only has the press increased production 100%, but it has eliminated breakage of rods. In addition, Weirton reports that in the six years this press has been operating, "practically no maintenance has been necessary."

Farquhar Presses Cut Your Costs

Just one more example of cost-cutting Farquhar performance in modern production! Farquhar Presses are

built for the job... assure faster production due to rapid advance and return of the ram... greater accuracy because of the extra guides on the moving platen... easy, smooth operation with finger-tip controls... longer life due to positive control of speed and pressure on the die... long, dependable service with minimum maintenance cost.

Farquhar engineers are ready to help solve whatever production problem you may have. Send for free catalog showing Farquhar Built-for-the-Job Presses in all sizes and capacities. Write to THE OLIVER CORPORATION, A. B. Farquhar Division, *Hydraulic Press Dept.*, 1522 Duke St., York, Pennsylvania.

HYDRAULIC PRESSES

for Bending • Forming • Forging • Straightening • Assembling • Drawing
Extruding • Joggling • Forging • and other Metalworking Operations

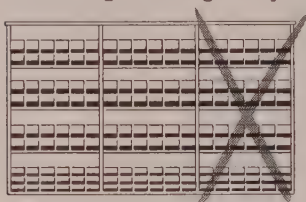
THE OLIVER CORPORATION, A. B. FARQUHAR Division

NEWS

ABOUT CREATED-METALS

Are Industry Inventories too High?

Business Week recently stated, "Don't underestimate the inventory problem. If a recession starts anytime in 1953, stocks of goods are likely to be at the bottom of it." *Iron Age* pointed out that, "hottest subject in automotive circles today is reducing tooling costs and shortening the tooling time cycle."



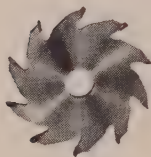
Informed sources in the field say that the Carboloy Minimum Tool Inventory Plan (described on these pages) is a forward step in answer to these problems as far as cutting tools are concerned.

★ ★ ★

Woodcutting Saws to Get New Teeth

The Carboloy organization has recently standardized production on 20 solid tungsten carbide tips for circular woodcutting saws. Saws with these carbide tips will soon be available from a number of saw manufacturers and offer phenomenal

production increases over steel blades. Tool manufacturers can obtain details and prices by writing for Bulletin W.W.-53-1, Carboloy Department of General Electric Company (address at right).



★ ★ ★

Communications Given Boost by Magnets



Because they help eliminate costly, bulky coils, Carboloy permanent magnets are being used more and more in communications equipment. The list includes loudspeakers for shops, radio, TV... other electrical components in telephones, transmitters, phonographs, hearing aids, etc.

These are the same Carboloy permanent magnets shop men find so useful for separating sheet steel, retrieving tools, holding jigs and doing other handy, timesaving jobs.

Advertisement

YOUR CARBOLOY SALES REPRESENTATIVE SAYS...

"Let us show you how up to 1/2



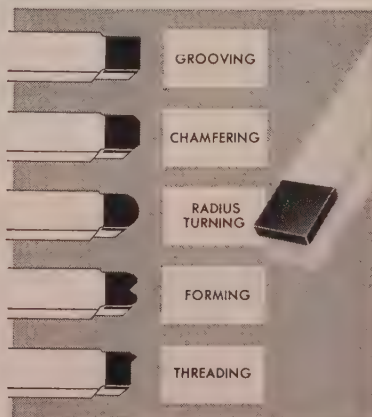
"OUR Minimum Tool Inventory Plan is the answer. It's an easy-to-adopt plan that works! Under it, you stock a basic number of low-cost Standard Carboloy Tools in place of many costly 'specials.' The proposal shows you how to adapt these Standards to almost any single-point tooling job... simply and quickly. You use your regular carbide equipment. You cut down production delays. You reduce your inventories 30% or more. Read about it on these pages..."



1 What are Standard Carboloy Tools?

They are high-quality carbide-tipped single-point tools for turning, boring, facing and other machining operations. They outlast high-speed steel tools much as 10 to 1... will operate machine speeds up to 4 or 5 times faster than ordinary tools.

There are only 11 styles of Carboloy Standards. They can be used "as is" or ground—in minutes—to do up to 80% of your single-point tool machining jobs. Carboloy Standards are near as your phone, too. They are stocked in your area by Authorized Carboloy Distributors.

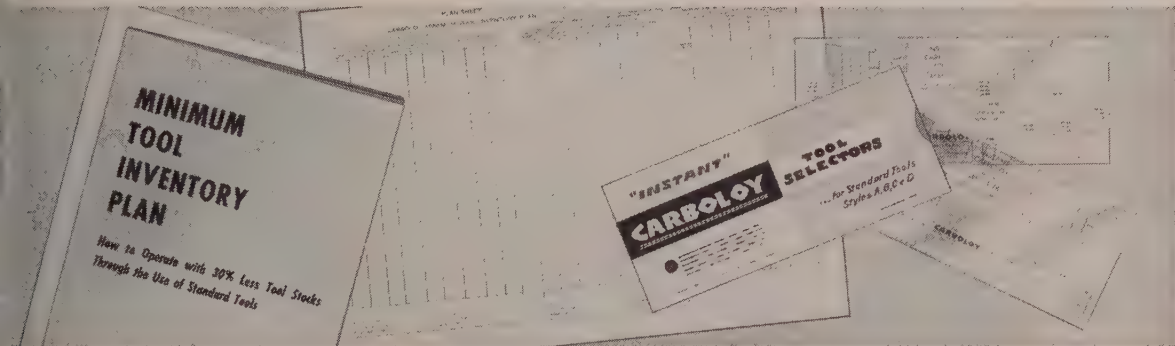


2 Here's how they adapt to your jobs.

At left is a style C Standard Carboloy Tool—one of the 11 styles. Note the generous-sized carbide tip. It can be used "as is" for some jobs... (adapted to meet any number of your special tooling requirements (as the 5 typical, adapted shapes at left, for example).

Carboloy Standards can be ground quickly in your own tool room, using an ordinary silicon carbide wheel for the rough grind, a diamond wheel only for sharpening. With a minimum stock of Standards on your shelves, you will be able to get up to 80% of your single-point machining jobs rolling in a hurry.

to reduce your single-point tool stocks ... with Standard Carboloy Tools!"



3 Here's why the Minimum Tool Inventory Plan (MTIP) will work for you.

The Carboloy MTIP includes all the helps you'll need to standardize your single-point machining jobs with Carboloy Standard Tools. Send for the free MTIP kit. When it arrives:

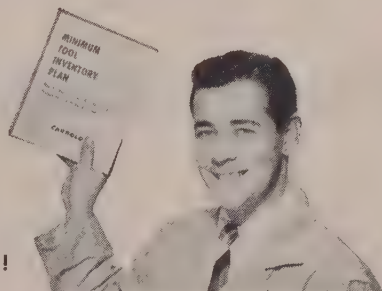
(1) Review your special single-point blueprints, using the handy plastic

Instant Tool Selectors (above) to choose in seconds the right Carboloy Standard Tool to adapt for each job. (2) Enter the findings on the Plan Sheet (above, center), filling in the "...Tools Recommended" section. *That's all there is to it!*

Now you can quickly compute what Standards you'll need, how many to stock, how much they'll cost. You'll see at a glance how the MTIP reduces your inventories up to one-third or more... lowers initial tool investment, shortens delivery cycles... gives you other benefits shopwide.

4 A Carboloy Sales Representative or Distributor will make sure it works.

Before you adopt this plan you can, if you wish, have a carbide expert from the Carboloy factory, district office or nearby Carboloy distributor come to your plant... help you get the MTIP rolling. He knows what carbide grades to recommend for particular jobs. He'll show you how Standard Carboloy Tools can pay for themselves in increased production and downtime savings alone. His services cost you nothing.



**Carboloy Tools Are Stocked
Coast To Coast By**



Look under "Tools" in the Yellow Pages of your local telephone book, or in Thomas' Register, for your nearby Carboloy distributor. He has complete local stocks and can give you complete carbide service.

"Carboloy" is the registered trademark of the Carboloy Department of General Electric Company.

GET ALL THE FACTS. MAIL COUPON TODAY!

CARBOLLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY
11141 E. 8 Mile Road, Detroit 32, Michigan

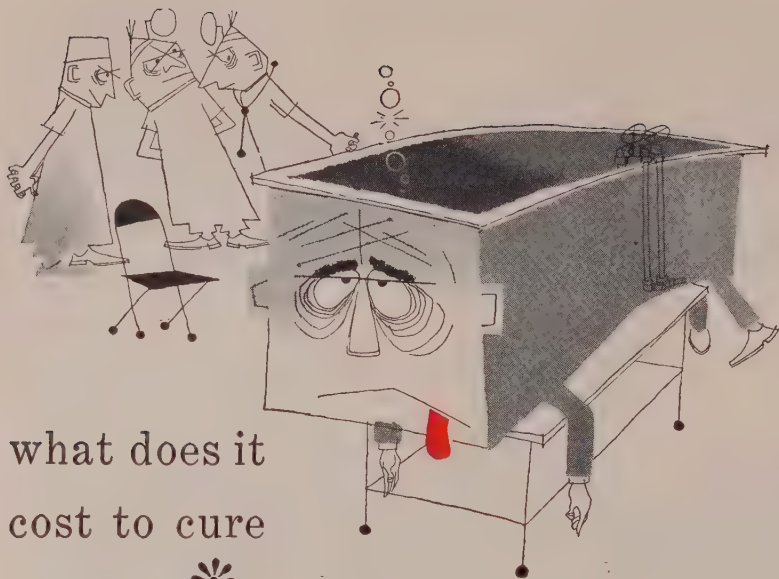
- ☐ Please rush me, at no cost or obligation, full details on your Minimum Tool Inventory Plan.
☐ Have your representative call, without obligation.

Name _____ Position _____

Company _____

Address _____

City _____ Zone _____ State _____



what does it cost to cure **coil-itis** in your processing tank?

The constant care it takes to keep tanks operating when they're plagued with coil-itis is extremely costly.

Downtime, and all the other maintenance time, slow heating and cooling ills of using old-fashioned pipe coils can be cured with Platecoils. As revolutionary as the new wonder drugs, Platecoils save as much as 50% in initial cost. They take 50% less space in the tank. They simplify maintenance and save hours of downtime. Compared to the hours it takes to clean and replace pipe coils, Platecoils can be cleaned and replaced in no time at all . . . without dumping the solution.

It costs less to cure coil-itis with Platecoils than to suffer its evils. Write for bulletin P72 today!

PLATECOILS SAVE 50% IN HEAT TRANSFER COSTS

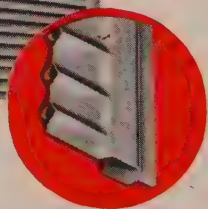
PLATECOILS COST
LESS TO BUY,
INSTALL, MAINTAIN

The Newcomb-Detroit Co., Grand Rapids Division, has found it is less costly to buy, install and maintain Platecoils than to fabricate pipe coils in their own plant. Ask about other case histories.



PLATECOIL

REPLACES PIPE COILS



Coil-itis — Diagnosed as tank heating and cooling problems. Platecoils — the prescription for solving pipe coil problems.

PLATECOIL DIVISION, KOLD-HOLD MANUFACTURING CO., LANSING 4, MICHIGAN

NEW PRODUCTS and equipment

multi-switch controls can be finished as well as a red stop light operated from the brake pedal. Towmotor Corp., Dept. ST, 12 E. 152nd St., Cleveland 10, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

Intraplant Personnel Vehicle

... service and supervisory jobs

Fast intraplant transportation for maintenance and servicemen watchmen or other personnel is accomplished by this gasoline-powered vehicle. Called the Jobst



it is all hand-controlled, with automatic drive, friction reverse and quick-action brakes. A large trunk in the rear provides ample space for light equipment or goods.

The 2½-hp engine develops speeds to 25 mph, averaging 80 to 100 miles per gallon of gasoline. Hatfield Engineering Co., Dept. S, 1300 N. Bristol St., Elkhart, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 22

Pipe Line Filters


... for 40 psi maximum pressure

Four small pipe line filter models are available for installations requiring only 40 psi maximum pressure for compressed air or gas. They feature one-bolt accessibility for quick inspection and cleaning without removing filters from the line.

The filters are made in two sizes and each size can use either adsorption pad media or companion

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.



INFORMATION

AVAILABLE FOR THE ASKING

Small Hole Tappers

Hamilton Tool Co.—Super-sensitive tapping machine described and illustrated in 4-page bulletin T-47 has capacity from smallest and finest tap #32, round table to chuck clearance of 4 in. and vertical travel of 1 1/4 in. Specifications and price data are included.

Clamps & Fixtures

Clamping Inc.—58-pages of dimensional drawings as well as specifications are presented in catalog on Vamp Assemblies and Fixture Designs. All components necessary to standardizing tool engineering practices are grouped for users' convenience. Items cataloged include clamps, nuts, bolts, hand cams and rollers, screws, studs, knob and lever clamps.

Locking Bolt

Lock Bolt Mfg. Co.—Operating principle and advantages of the Lockbolt which permanently locked in place like rivet are contained in 4-page illustrated folder and supplementary bulletins. Cross-sectional and dimension-drawings and application data are included.

Stainless Steel Pipe

Carpenter Steel Co.—"How you can get more stainless steel pipe for your money" is theme of 6-page folder which deals with advantages offered by schedule 5 stainless steel pipe. Lighter walled and having large inside diameter for same outside diameter, this pipe weighs and costs less than equivalent size schedule 40 pipe. Technical data are summarized.

Brass-Bronze-Copper

Chase Brass & Copper Co.—Do you want an informative manual on free-cutting brass, bronze and copper? Then send for 64-page manual D-7 which gives properties and application data on wrought copper alloys which are available in wire, rod, bar, strip, plate, tubular and rolled forms.

Covered also are such subjects as tools, speeds, feeds and lubricants to be employed in machining these metals.

74. Automatic Press

Morey Machinery Co.—Details of the Raskin Velox type high speed automatic press for stamping and piercing sheet metal from coil stocks are presented in 4-page illustrated bulletin. Four models have capacities of 11 to 55 tons.

75. Braided Wire Slings

Union Wire Rope Corp.—Dimension, weights and safe loads for various types of Tuffy braided wire fabric slings and fittings are tabulated in 48-page handbook. Step-by-step splicing is also described and illustrated, as well as directions for attaching sockets or socketing a ferule. Braiding is such that rope can be straightened no matter how badly kinked.

76. X-Ray Accessories

Bar-Ray Products, Inc. — Photographs, specifications, descriptive data and application information for Bar-Ray line of x-ray accessories, isotope equipment, radiation protection and x-ray film processing systems are contained in 72-page illustrated catalog W-52.

77. Loading Ramps

Superior Railway Products Corp.—Pictured in 4-page folder 255 are typical installations of hydraulic ramps, track-spanning bridges, street loading platforms and portable one-man operated adjustable ramps.

78. Castings

Decatur Casting Co.—Facilities for producing various light gray iron and alloy iron castings are described in this 20-page brochure. Series of photographs shows castings produced for gasoline pumps and meters, electric motors, air compressors, electric starters, generators and distributors. This could be your "foundry division."

3-30-53

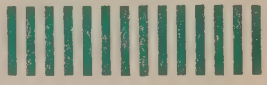
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Penton Building, Cleveland 13, Ohio

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5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
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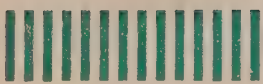
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8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL **3-30-53**

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79. Water Softeners

Permutit Co.—Troubles caused by hard water, and economies effected by curing them, are described in 16-page illustrated bulletin 2386. Line of company's ion-exchange materials is detailed. Differentiation between the three basic types of equipment is made and a cut-away view of an automatic unit and diagrams of systems are included.

80. Strip Handling Equipment

Fried Steel Equipment Mfg. Corp.—Complete line of sheet and strip materials handling equipment as well as the newly patented Stripveyor and Liftveyor are described in 8-page illustrated bulletin. Equipment will handle stock with minimum of cost and delay, and assures complete safety.

81. Pipe Thread Systems

Detroit Tap & Tool Co.—24-page pipe thread manual C-52 covers complete design and gaging information as well as specifications for three standard pipe thread systems. Specs for taper and straight pipe taps, thread plug and ring gages and plain plug and ring gages are included.

82. Operating a Lift Truck

Hyster Co.—“How to Operate a Lift Truck” is an instructive 24-page well-illustrated manual that is instructive for both the beginner and the experienced operator. It will help old-time operators in rating their knowledge of lift truck operation. Cartoons and sketches enliven the text.

83. Vapor Degreaser

E. I. du Pont de Nemours & Co.—20-page illustrated booklet “Vapor Degreasing with Du Pont Nonflammable Solvents” tells how trichloroethylene is used for fast, thorough and economical metal cleaning. The where, how and why of vapor degreasing are discussed.

84. Steel Belt Conveyor

Prab Conveyors, Inc. — Drawings, engineering data and photographs of steel belt conveyor are found in this catalog identified as No. 250. Features of the steel belt and the Chip-A-Way conveyor using it for chip and scrap removal from machine tools and presses are covered.

85. Locknuts

Industrial Fasteners Institute—Intended to promote more effective use of locknuts, this 24-page well-illustrated brochure provides information on each of 36 types of locknuts. Each

is described, its principle of operation given and names of firms making and photos and drawings of it provided. It'll help you as a user selecting the locknut best suited to a particular application.

86. Metal Cleaning & Treating

Despatch Oven Co. — Multistep washers, gas and steam heating systems and other equipment designed expressly for metal cleaning and treating operations are detailed in 12-page illustrated bulletin 68. Designed to process metal products efficiently, equipment can be built to fit into straight-line production, or to meet the needs of individual users.



EDITORIAL REPRINTS:

87. The Blast Furnace

Has the blast furnace become obsolete? Opinion has been expressed in a United Nations technical report that blast furnaces are on the way out as the most economical and satisfactory means for smelting iron ore. C. E. Agnew, Cleveland blast furnace consultant, offers forceful agreement in Part I of STEEL reprint of article “Don't Write Off Blast Furnace.”

88. Nodular Iron

Spheroidal graphite or nodular iron is being used for large, intricately-cored castings at Cooper-Bessemer Corp. Excellent castability plus high yield point to profits. Properties as well as potentialities of this relatively new iron are discussed in STEEL reprint “Nodular Iron Tackles Big Jobs.”

89. Industrial Electronics

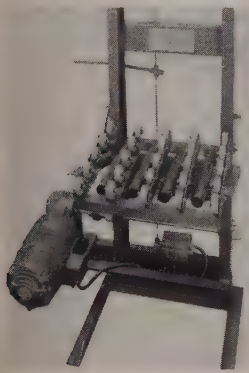
In spite of the phenomenal growth of the electronics field, the rest of the industry has not shared or profited from its development. The reason is the economics of the situation. A. Zimmerman and T. F. Hraychak, STEEL assistant editors, expand further on the subject in reprint on Industrial Electronics, A Young Growth With Growing Pains.”

90. Cold Cleaning Agent

A new combination of alkaline solvent-wetting agent is effective on power washers at room temperature. It pays off particularly for the cleaning jobs with no incrustation. Read about this new production cleaner in STEEL reprint “The Cleaner Cuts Costs” by D. C. Meyer of E. F. Houghton & Co.

lial fin inserts. Dollinger Corp.,
pt. ST, 11 Centre Park, Rochester
N. Y.
MORE DATA—CIRCLE REPLY CARD NO. 23

Door-to-Floor Handler
... extends gravity system
Packages can be transferred
om floor to floor mechanically and
minimum cost with this con-
veyor model handler. The conveyor
ags into a wall socket, can be
ilt to fit flush against the wall



d has 150-pound lifting capacity.
Roller section is designed as an
extension to a gravity conveyor
system. Equipment is powered by
reversing motor. Steel Parts Mfg.
Co., Dept. ST, 4630 W. Harrison
St., Chicago, Ill.
MORE DATA—CIRCLE REPLY CARD NO. 24

Degreasing Agent
... for use in tumbling mills
Cottentex, a finely ground cellu-
lose fiber material with high ab-
sorbency is available for use in
degreasing and drying operations
employing tumbling mills. It is
aimed to absorb more than eight
times its own weight and does a
thorough job of absorbing oils,
grease or any liquid from metals,
plastics or any type composition.
Cottentex Mfg. Co., Dept. ST, 4030
W. Wells St., Milwaukee, Wis.
MORE DATA—CIRCLE REPLY CARD NO. 25

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REPLY CARD**
Just circle the corresponding
number of any item in this
section for more information.

FORMING FACTS

72% SAVING IN METAL!
80% INCREASE IN PRODUCTION!

UNIQUE BALANCE CO. INC.

Typical results by every user of **NILSON 4-SLIDE** Wire and Ribbon Metal **FORMING MACHINES**

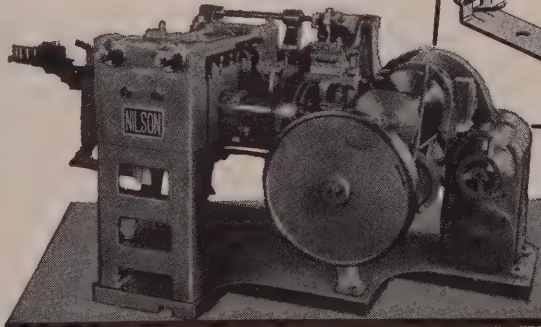
Plants from coast-to-coast are setting new production records
with **NILSON 4-SLIDE MACHINES** . . . and experiencing
tremendous economies and greatly improved quality.

Are you confronted with a keen competitive situation? Take the advice of hundreds of plant supervisors . . . install **NILSON MACHINES** and enjoy these economies at once.

NILSON combination press and 4-SLIDE forming machines take the stock directly from the coil—feed, straighten, pierce, blank, swage, stamp, coin—perform up to 5 forming operations and cut off . . . all in one quick, precise operation **AUTOMATICALLY!**

USING A NILSON COMBINATION PRESS AND 4-SLIDE FORMING MACHINE

Unique Balance Co., Inc. (one of the largest manufacturers of sash balance equipment), now produces 71,532 more parts out of the same amount of steel, compared to their former method. Production speeds increased from 100 to 180 pieces per minute.



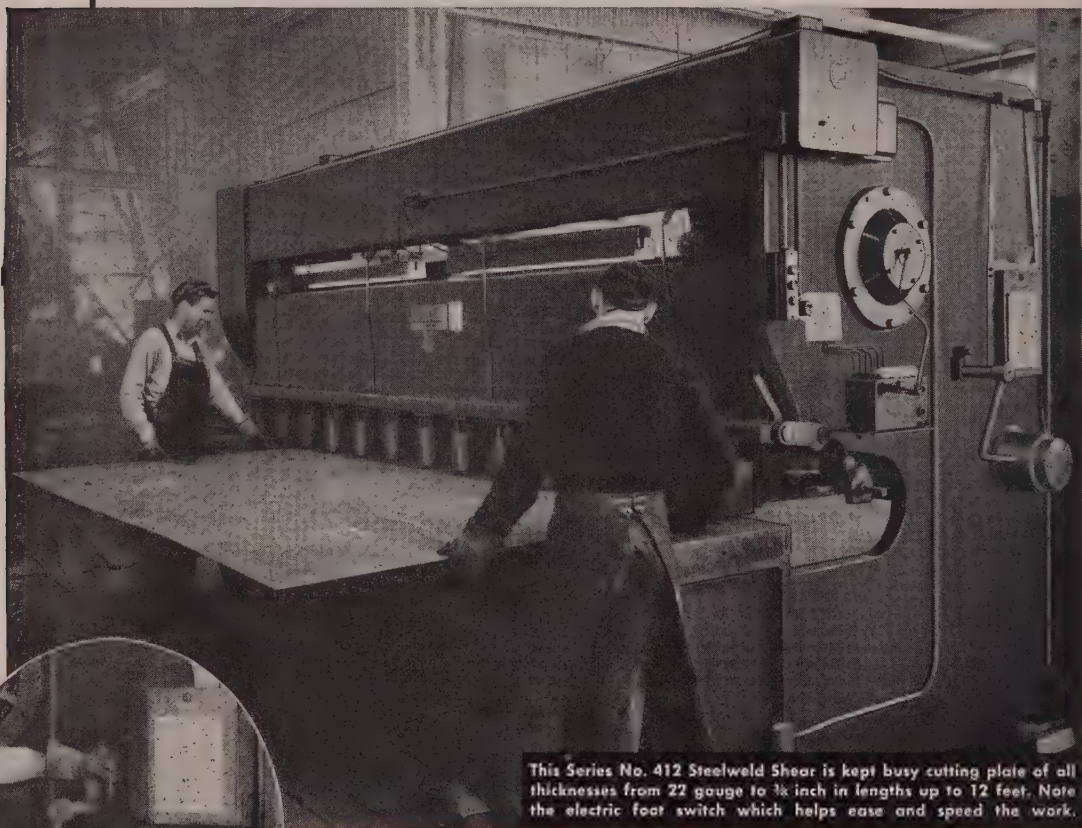
For specific recommendations, send prints or samples of your operation when requesting bulletin.

THE A. H. NILSON MACHINE CO.
1512 RAILROAD AVE. BRIDGEPORT, CONN.

Automatic Chain-Making Machines • Automatic Staple Forming Machines • Wire and Stock Reels • Foot Presses • Wire Straightening Equipment • Slide Feeds for Presses



KNIVES STAY SHARP LONGER for California Steelweld Shear User



This Series No. 412 Steelweld Shear is kept busy cutting plate of all thicknesses from 22 gauge to $\frac{3}{8}$ inch in lengths up to 12 feet. Note the electric foot switch which helps ease and speed the work.

"It's a shame," said the shop foreman at Stephens-Adamson Mfg. Co., Los Angeles, California, "but since installing our Steelweld Shear the knife-sharpening man has been crying because we have no work for him."

After months of continuous operation, eight hours a day, usually six days a week, inspection of cut pieces indicates the knives are practically as sharp as new. Parts cut have no burrs and are straight and true. Even when the cutting edges of the knives finally become dulled, there are three more cutting edges ready for use as all four corners of each knife are prepared for shearing.

Stephens-Adamson like their Steelweld Shear and are happy over its operation. It plays an important role in the manufacture of screens, elevators and conveyors which are the principal products of this large West-coast plant. In their words, it is "heavy, well built and dependable. We know it is reliable and always ready to handle our work from day to day."

One of the big reasons why knives stay sharp longer on Steelweld Shears is the simplicity with which knife clearance can be adjusted for every plate thickness. It's merely a matter of turning a hand crank until the gauge pointer is on the proper figure. No bolts to loosen. No need of a feeler gauge.

GET THIS BOOK!

CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

7817 East 282nd Street • Wickliffe, Ohio



STEELWELD PIVOTED BLADE SHEARS

THE STROKE of midnight tomorrow will signal the attainment of another new record in steelmaking: The first 10-million-ton month in history.

All this month, production of steel for ingots and castings exceeded 100 per cent of capacity, and with this month being 31 days in length the industry will be able for the first time to reach a monthly total of 10 million net tons.

The high rate of operations cannot be given all the credit for the new record. The expansion of the industry's capacity is playing a big part.

PACE IS FAST—Output in the week ended Mar. 28 was at rate of 101 per cent of capacity. Yield was 2,277,000 tons of steel for ingots and castings.

How long can production continue at this torrid pace? That question is in many minds. Indications are that a busy third quarter is shaping up. Taking a long-range look ahead, Detroit Steel Corp. hazards a prediction that the steel industry can expect an over-all operating rate of at least 85 per cent during the next five years. If the industry can maintain that rate it probably will be happy, or at least fortunate. There have been many years in its history when, because of the lack of business, it has operated far below that level.

NO CAUSE FOR ALARM—A drop away from the capacity rate of operations should not be looked upon entirely with alarm. W. H. Colvin Jr., president, Crucible Steel Co. of America, said in an interview on the West Coast that a sizable portion of the demand for steel has come from the steel industry's own expansion program. That 2½-year program is about completed.

UNFINISHED BUSINESS—Regardless of how strong the third-quarter demand is for steel, operations will be lent some support from orders the mills will be unable to fill in the second quarter and will have to carry over into the third. Arrearages in bars, plates, wide flange beams, possibly standard shapes and some major grades of sheets are regarded as a certainty. Producers of these products current on

July 1 will be the exception, say some observers.

Carryover of unfilled orders into the third quarter likely will cause some delay in making the new Defense Materials System fully effective. In switching from the Controlled Materials Plan on June 30 to the new DMS on July 1, rated tonnage carried over from the second quarter is to receive preference over nonrated orders until it is worked off.

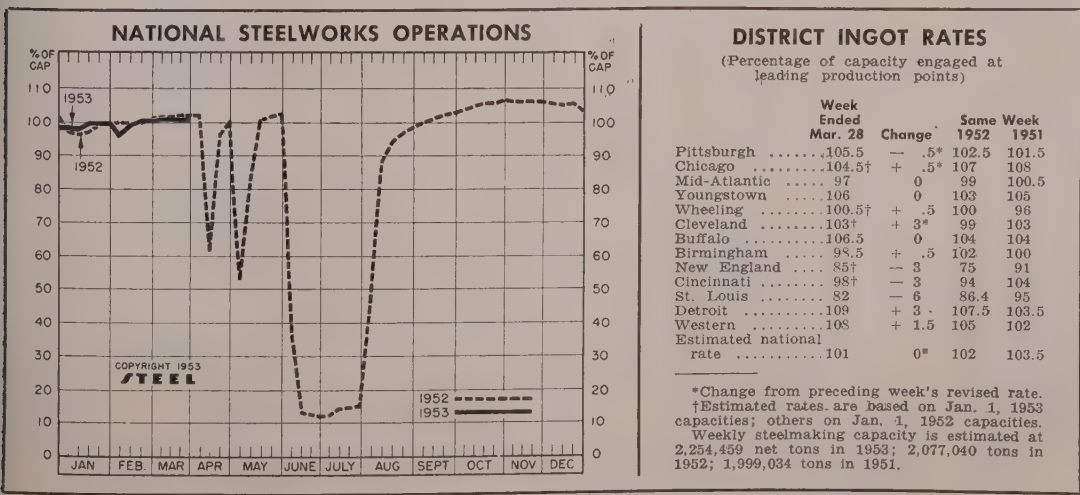
START ON THIRD QUARTER—Producers booking orders for a whole quarter at a time have already opened their third-quarter books on alloy steels and on cold drawn carbon steels, which require a longer lead time than the hot carbon steels. Third-quarter order books for hot carbon grades will be opened on Apr. 1 or shortly afterward.

The biggest consumer of steel—the automobile industry—is still pushing hard to get steel. In addition to this tremendous pressure is a strengthening demand from household appliance makers and farm implement manufacturers.

STIMULANT—The high production rate in the auto industry and the strengthening in the appliance field are imparting some life to the lagging business pace of the foundry industry. Foundries serving the automotive industry are extremely busy and those supplying the household appliance makers are benefiting from increases in orders.

Producers of large hot-rolled and cold-finished bars are confronted with more business than they can handle.

SOFT SPOTS—Amidst the tight market in steel are soft spots. Buttweld pipe is becoming increasingly available, and some distributors of it are passing up 30 to 35 per cent of their monthly allotments of it. In the Pittsburgh area, manufacturers' wire is showing signs of slackening. Merchant wire products, such as nails and fence wire, are plentiful. Galvanized sheets are not extremely difficult to get, although demand for them has picked up a little. Foundry pig iron is generally plentiful, largely as result of the lagging business at foundries.



Composite Market Averages

FINISHED STEEL PRICE INDEX:	Mar. 24	Mar. 17	Month	March
Bureau of Labor Statistics	1953	1953	Ago	Average
(1947-1949=100)	130.7	130.7	130.5	130.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Mar. 24, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	\$3.775	Sheets, C.R. carbon	\$5.275
Track spikes	6.650	Sheets, galv.	6.765
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.333
Joint bars	4.925	Pipe, black, butt weld (100 ft)	7.090
Plates, carbon	4.150	Pipe, galv., butt weld (100 ft)	8.778
Structural shapes	4.200	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.885	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.153	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.425
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.880
Sheets, H.R. carbon ..	4.125	Woven wire fence (20 rod roll) ..	13.629

FINISHED PRICE INDEX, Weighted:
Calculated by STEEL*

	Mar. 26	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Index (1935-39 av.=100) ..	181.31	181.31	181.31	171.92	135.91
Index in cents per lb.	4.912	4.912	4.912	4.657	3.682

ARITHMETICAL PRICE COMPOSITES:
Calculated by STEEL*

Finished Steel NT	\$110.98	\$110.98	\$110.98	\$106.32	\$81.14
No. 2 Fdry, Pig Iron, T.	55.04	55.04	55.04	52.54	39.78
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	39.31
Malleable Pig Iron, GT.	55.77	55.77	55.77	53.27	40.41
Steelmaking Scrap, 3T.	44.17	43.17	43.00	43.00	40.25

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Mar. 26	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del Philadelphia ..	4.502	4.502	4.502	4.223	3.358
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.45
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.85
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.05
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.80
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	5.475-5.225	5.475-5.225	5.475-5.225	4.85-5.10	3.75
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.90-6.20	5.20
Tin plate box, Pittsburgh ..	\$8.95	\$8.95	\$8.95	\$8.70	\$6.70

SEMIFINISHED

Billets, forging, Pitts. (NT) ..	\$70.50	\$70.50	\$70.50	\$66.00	\$54.00
Wire rods, 3/4"-1", Pitts.	4.425	4.425	4.425	4.10-30	3.175

PIG IRON, Gross Ton

Bessemer, Pitts.	\$55.50	\$55.50	\$55.50	\$53.00	\$40.996
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	40.496
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	42.23
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

*F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	\$44.00	\$44.00	\$44.00	\$44.00	\$40.25
No. 1 Heavy Melt, E. Pa.	46.00	46.00	41.50	42.50	39.00
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	42.50	39.00
No. 1 Heavy Melt, Valley	44.25	44.25	44.00	44.00	40.25
No. 1 Heavy Melt, Cleve.	44.25	44.25	43.00	43.00	39.75
No. 1 Heavy Melt, Buffalo.	47.00	43.50	42.75	43.00	44.00
Rails, Re-rolling, Chicago.	56.00	56.00	52.50	52.50	49.50
No. 1 Cast, Chicago.	43.00	43.00	43.00	49.00†	66.00

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connisvl.	\$14.75	\$14.75	\$14.75	\$14.75	\$12.50
Beehive, Fdry, Connisvl.	17.00	17.00	17.00	17.50	14.875
Oven, Fdry, Chicago.	24.50	24.50	24.50	23.00	19.25

PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	\$56.50	\$57.00	\$57.50	\$58.00
New York, del.	60.78	61.28	61.28	61.02
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75

Birmingham District

Alabama City, Ala. R2	50.88	51.38	...	...
Birmingham R2	50.88	51.38	...	...
Birmingham S9 .....	...	51.38	...	...
Woodward, Ala. W15	50.88	51.38	...	...
Cincinnati, del. ....	...	53.93	...	...

Buffalo District

Buffalo R2	54.50	55.00	55.50	...
Buffalo H1	54.50	55.00	55.50	...
Tonawanda, N.Y. W12	54.50	55.00	55.50	...
No. Tonawanda, N.Y. T9 .....	...	55.00	55.50	...
Boston, del.	65.15	65.65	66.15	...
Rochester, N.Y., del.	57.52	58.02	58.52	...
Syracuse, N.Y., del.	58.62	59.12	59.62	...

Chicago District

Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	...	55.00	...
Indiana Harbor, Ind. I-2	54.50	...	55.00	...
So. Chicago, Ill. W14	54.50	55.00	55.00	...
So. Chicago, Ill. Y1	54.50	55.00	55.00	...
So. Chicago, Ill. U5	54.50	...	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del. ....	...	61.30	61.30	...

Cleveland District

Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	...
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	...	...	55.50

Duluth I-3

Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1 .....	...	59.50	60.00	...
Fontana, Calif. K1	60.50	61.00	...	...
Granite City, Ill. G4	56.40	56.90	57.40	...
St. Louis, del. (inc. tax)	57.15	57.65	58.15	...
Ironton, Utah C11	54.50	55.00	...	...
Geneva, Utah C11	54.50	...	...	...
Lone Star, Tex. L6	56.50	*51.00	51.00	...
Minnequa, Colo. C10	56.50	57.50	57.50	...
Rockwood, Tenn. T3 .....	...	...	58.50	...

Pittsburgh District

Neville Island, Pa. P6 .....	...	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge ..	...	...	...	...
Aliquippa, del. ....	...	56.37	56.37	56.87
McKees Rocks, del. ....	...	56.04	56.04	56.54
Lawrenceville, Homestead. ....	...	...	...	...
Wilmerding, Monaca, del. ....	...	56.66	56.66	57.16
Verona, Trafford, del. ....	...	57.19	57.19	57.69
Brackenridge, del. ....	...	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	...	...	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	...	...	...
McKeesport, Pa. N3	54.50	...	...	55.50
Monessen, Pa. P7	56.50	...	...	...
Sharpville, Pa. S6 .....	...	...	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	59.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	...	...
Troy, N.Y. R2	56.50	57.00	57.50	58.00

Youngstown District

Hubbard, O. Y1	54.50	55.00	55.00	...
Youngstown Y1	54.50	55.00	55.00	...
Youngstown U5	54.50	...	...	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

*Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over. Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add \$2 per ton and each additional 0.25%, add \$1 per ton.

BLAST FURNACE SILVER PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add \$1.50 for each 0.5% Si)	
Jackson, O. G2, J1	\$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVER PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1 for each 0.5% Mn over 1%; \$2 per gross ton premium for 0.045% max P)	
Niagara Falls, N.Y. P15	\$91.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry, 12 1/2 lb piglets, 18% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry, frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)	
Lyles, Tenn. T3	\$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	\$59.50
Steelton, Pa. B2	62.50
Philadelphia, delivered	66.00
Troy, N.Y. R2	62.50

Semifinished and Finished Steel Products

Mill prices as reported to STEEL, Mar. 26, 1953, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

NTS, Carbon, Forging (NT)		STRUCTURALS		PLATES, Carbon Steel		BARS & SMALL SHAPES, H. R.,		Seattle B3, N14		
Ala. Calif. K1	.....	\$81.00	Albama City, Ala. R2	.....	3.90	Albuquerque, Pa. W8	.....	5.925	So. Chicago, Ill. R2
Ala. Calif. U5	.....	54.00	Albuquerque, Pa. W8	.....	5.925	Bessemer, Ala. T2	.....	5.925	So. Duquesne, Pa. U5
Ala. Calif. S24	.....	75.00	Bessemer, Ala. T2	.....	3.85	Bethlehem, Pa. B2	.....	5.925	So. San Francisco B3
NTS, Alloy (NT)			Bethlehem, Pa. B2	.....	3.90	Bethlehem, Pa. B2	.....	5.925	SparrowsPoint, Md. B2
Ala. Calif. K1	.....	83.00	Clairton, Pa. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Stearns, Ill. (1) N15
Ala. Calif. S5	.....	65.00	Clairton, Pa. T2	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Struthers, O. Y1
Ala. Calif. C18	.....	57.00	Fontana, Calif. T1	.....	4.50	Bethlehem, Pa. B2	.....	5.925	Torrance, Calif. C11
Ala. Calif. U5	.....	57.00	Gary, Ind. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Youngstown R2, U5
NTS, BLOOMS & SLABS			Geneva, Utah C11	3.85	Bethlehem, Pa. B2	5.925	BARS, Reinforcing (Fabricated; to consumers)	
Carbon, Rerolling (NT)			Houston S5	.....	4.25	Bethlehem, Pa. B2	.....	5.925	Huntington, W. Va. W7
Bessemer, Pa. U5	.....	\$59.00	Ind. Harbor, Ind. I-2	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Indianapolis, Ind. I-2
Bessemer, Pa. U5	.....	59.00	Johnstown, Pa. B2	.....	3.90	Bethlehem, Pa. B2	.....	5.925	Kansas City, Mo. S5
Bessemer, Pa. U5	.....	59.00	Kansas City, Mo. S5	.....	4.45	Bethlehem, Pa. B2	.....	5.925	Los Angeles B3
Bessemer, Pa. U5	.....	59.00	Lackawanna, N.Y. B2	.....	3.90	Bethlehem, Pa. B2	.....	5.925	Marion, O. P11
Bessemer, Pa. U5	.....	59.00	Los Angeles B3	.....	4.45	Bethlehem, Pa. B2	.....	5.925	Seattle B3, N14
Bessemer, Pa. U5	.....	59.00	Minneapolis, Colo. C10	.....	4.30	Bethlehem, Pa. B2	.....	5.925	Sand Springs S5
Bessemer, Pa. U5	.....	59.00	Munhall, Pa. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	So. San Francisco B3
Bessemer, Pa. U5	.....	59.00	Niles, Calif. (22) P1	.....	4.56	Bethlehem, Pa. B2	.....	5.925	SparrowsPt. 1/4" B2
Bessemer, Pa. U5	.....	59.00	Phoenixville, Pa. P4	.....	4.95	Bethlehem, Pa. B2	.....	5.925	Williamsport, Pa. S19
Bessemer, Pa. U5	59.00	Seattle B3	4.50	Bethlehem, Pa. B2	5.925	RAIL STEEL BARS	
Bessemer, Pa. U5	.....	59.00	So. Chicago, Ill. U5, W14	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Chicago Hts. (3,4) C2
Bessemer, Pa. U5	.....	59.00	So. San Francisco B3	.....	4.40	Bethlehem, Pa. B2	.....	5.925	Chicago Hts. (3,4) I-2
Bessemer, Pa. U5	.....	59.00	Torrance, Calif. C11	.....	4.45	Bethlehem, Pa. B2	.....	5.925	Franklin Park, Ill. F3
Bessemer, Pa. U5	.....	59.00	Weirton, W. Va. W6	.....	4.10	Bethlehem, Pa. B2	.....	5.925	Fort Worth, Tex. (26) T4
Carbon, Forging (NT)			Wide Flange			Bethlehem, Pa. B2	.....	5.925	Huntington, W. Va. (3) W7
Ala. Calif. R2	.....	\$70.50	Bethlehem, Pa. B2	.....	3.90	Bethlehem, Pa. B2	.....	5.925	Marion, O. (3) P11
Ala. Calif. R2	.....	70.50	Clairton, Pa. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Moline, Ill. (3) R2
Ala. Calif. R2	.....	70.50	Clairton, Pa. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Tonawanda (3,4) B12
Ala. Calif. R2	.....	70.50	Fontana, Calif. K1	.....	5.05	Bethlehem, Pa. B2	.....	5.925	Williamsport (3) S19
Ala. Calif. R2	.....	70.50	Johnstown, Pa. B2	.....	3.90	Bethlehem, Pa. B2	.....	5.925	Williamsport (4) S19
Ala. Calif. R2	70.50	Lackawanna, N.Y. B2	3.90	Bethlehem, Pa. B2	5.925	BARS, Wrought Iron (Add 4.7% to base and extras)	
Ala. Calif. R2	.....	70.50	Munhall, Pa. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Economy, Pa. (S.R.) B14
Ala. Calif. R2	.....	70.50	So. Chicago, Ill. U5	.....	3.85	Bethlehem, Pa. B2	.....	5.925	Economy, Pa. (D.R.) B14
Alloy Stand. Shapes			Clairton, Pa. U5	.....	4.725	Bethlehem, Pa. B2	.....	5.925	Economy (Staybolt) B14
Ala. Calif. R2	.....	70.50	Fontana, Calif. K1	.....	5.925	Bethlehem, Pa. B2	.....	5.925	McK.Rks. (Staybolt) B14
Ala. Calif. R2	.....	70.50	Gary, Ind. U5	.....	4.725	Bethlehem, Pa. B2	.....	5.925	McK.Rks. (S.R.) L5
Ala. Calif. R2	.....	70.50	Munhall, Pa. U5	.....	4.725	Bethlehem, Pa. B2	.....	5.925	McK.Rks. (D.R.) L5
Ala. Calif. R2	70.50	So. Chicago, Ill. U5	4.725	Bethlehem, Pa. B2	5.925	SHEETS, Hot-Rolled Steel (18 gage and heavier)	
H.S., L.A. Stand. Shapes			Ala. Calif. J5	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Alabama City, Ala. R2
Ala. Calif. J5	.....	5.80	Bessemer, Ala. T2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Albany, Ky. (8) A10
Ala. Calif. J5	.....	5.80	Bethlehem, Pa. B2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Butler, Pa. A10
Ala. Calif. J5	.....	5.80	Clairton, Pa. U5	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Cleveland J5, R2
Ala. Calif. J5	.....	5.80	Fontana, Calif. T1	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Conshohocken, Pa. A3
Ala. Calif. J5	.....	5.80	Gary, Ind. U5	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Detroit M1
Ala. Calif. J5	.....	5.80	Geneva, Utah C11	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Economy, Mich. G5
Ala. Calif. J5	.....	5.80	Ind. Harbor, Ind. I-2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Fontana, Calif. T2
Ala. Calif. J5	.....	5.80	Ind. Harbor, Ind. I-2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Fontana, Calif. T1
Ala. Calif. J5	.....	5.80	Johnstown, Pa. B2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Gary, Ind. U5
Ala. Calif. J5	.....	5.80	Lackawanna, N.Y. B2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Geneva, Utah C11
Ala. Calif. J5	.....	5.80	Los Angeles B3	.....	6.35	Bethlehem, Pa. B2	.....	5.925	Granite City, Ill. G4
Ala. Calif. J5	.....	5.80	Munhall, Pa. U5	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Ind. Harbor, Ind. I-2, Y1
Ala. Calif. J5	.....	5.80	Seattle B3	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Irvine, Pa. U5
Ala. Calif. J5	.....	5.80	So. Chicago, Ill. U5	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Lackawanna, N.Y. B2
Ala. Calif. J5	.....	5.80	So. San Francisco B3	.....	6.30	Bethlehem, Pa. B2	.....	5.925	Munhall, Pa. U5
Ala. Calif. J5	.....	5.80	Struthers, O. Y1	.....	6.30	Bethlehem, Pa. B2	.....	5.925	Niles, O. N12
H.S., L.A. Wide Flange			Bethlehem, Pa. B2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Pittsburgh, Calif. C11
Bethlehem, Pa. B2	.....	5.80	Lackawanna, N.Y. B2	.....	5.80	Bethlehem, Pa. B2	.....	5.925	Pittsburgh J5
Lackawanna, N.Y. B2	.....	5.80	Milton, Pa. B6	.....	4.55	Bethlehem, Pa. B2	.....	5.925	Sharon, Pa. S3
Milton, Pa. B6	.....	4.55	Minneapolis, Colo. C10	.....	4.40	Bethlehem, Pa. B2	.....	5.925	So. Chicago, Ill. W14
Minneapolis, Colo. C10	.....	4.40	Niles, Calif. P1	.....	4.65	Bethlehem, Pa. B2	.....	5.925	SparrowsPoint, Md. B2
Niles, Calif. P1	.....	4.65	Nonwanna, Pa. B11	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Stearns, Ill. W10
Nonwanna, Pa. B11	.....	3.95	Pittsburgh, Calif. C11	.....	3.65	Bethlehem, Pa. B2	.....	5.925	Torrance, Calif. C11
Pittsburgh, Calif. C11	.....	3.65	Pittsburgh J5	.....	3.75	Bethlehem, Pa. B2	.....	5.925	Weirton, W. Va. W6
Pittsburgh J5	.....	3.75	Seattle B3, N14	.....	4.70	Bethlehem, Pa. B2	.....	5.925	West Leechburg, Pa. A4
Seattle B3, N14	.....	4.70	So. Chicago R2, U5, W14	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Youngstown U5, Y1
So. Chicago R2, U5, W14	.....	3.95	So. Duquesne, Pa. U5	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Youngstown U5, Y1
So. Duquesne, Pa. U5	3.95	So. San Fran. Calif. B3	4.70	Bethlehem, Pa. B2	5.925	SHEETS, H.R. (19 gage)	
So. San Fran. Calif. B3	.....	4.70	Sterling, Ill. N15	.....	4.55	Bethlehem, Pa. B2	.....	5.925	Alabama City, Ala. R2
Sterling, Ill. N15	.....	4.55	Struthers, O. Y1	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Dover, O. R1
Struthers, O. Y1	.....	3.95	Youngstown R2, U5	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Mansfield, O. E6
Youngstown R2, U5	.....	3.95	BAR SIZE ANGLES; S. Shapes			Bethlehem, Pa. B2	.....	5.925	Niles, O. N12
BAR SIZE ANGLES; S. Shapes			Ala. Calif. J5	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Torrance, Calif. C11
Ala. Calif. J5	3.95	Atlanta A11	4.00	Bethlehem, Pa. B2	5.925	SHEETS, H.R. (14 gage, heavier)	
Atlanta A11	.....	4.00	Niles, Calif. P1	.....	4.65	Bethlehem, Pa. B2	.....	5.925	Cleveland J5, R2
Niles, Calif. P1	.....	4.65	Nonwanna, Pa. B11	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Conshohocken, Pa. A3
Nonwanna, Pa. B11	.....	3.95	Pittsburgh, Calif. C11	.....	3.65	Bethlehem, Pa. B2	.....	5.925	Economy, Mich. G5
Pittsburgh, Calif. C11	.....	3.65	Pittsburgh J5	.....	3.75	Bethlehem, Pa. B2	.....	5.925	Fontana, Calif. T2
Pittsburgh J5	.....	3.75	Seattle B3, N14	.....	4.70	Bethlehem, Pa. B2	.....	5.925	Fontana, Calif. T1
Seattle B3, N14	.....	4.70	So. Chicago R2, U5, W14	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Gary, Ind. U5
So. Chicago R2, U5, W14	.....	3.95	So. Duquesne, Pa. U5	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Ind. Harbor, Ind. I-2
So. Duquesne, Pa. U5	.....	3.95	So. San Fran. Calif. B3	.....	4.70	Bethlehem, Pa. B2	.....	5.925	Ind. Harbor, Ind. Y1
So. San Fran. Calif. B3	.....	4.70	Sterling, Ill. N15	.....	4.55	Bethlehem, Pa. B2	.....	5.925	Irvine, Pa. U5
Sterling, Ill. N15	.....	4.55	Struthers, O. Y1	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Lackawanna (35) B2
Struthers, O. Y1	.....	3.95	Youngstown R2, U5	.....	3.95	Bethlehem, Pa. B2	.....	5.925	Munhall U5
Youngstown R2, U5	.....	3.95	BAR SIZE ANGLES; H.R. CARBON			Bethlehem, Pa. B2	.....	5.925	Pittsburgh J5
BAR SIZE ANGLES; H.R. CARBON			Bethlehem, Pa. B2	.....	4.15	Bethlehem, Pa. B2	.....	5.925	Sharon, Pa. S3
Bethlehem, Pa. B2	.....	4.15	BARS, Hot-Rolled Alloy			Bethlehem, Pa. B2	.....	5.925	So. Chicago, Ill. U5
BARS, Hot-Rolled Alloy			Bethlehem, Pa. B2	.....	4.675	Bethlehem, Pa. B2	.....	5.925	SparrowsPoint (38) B2
Bethlehem, Pa. B2	.....	4.675	Buffalo R2	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Stearns, Ill. W10
Buffalo R2	.....	4.675	Newman R2	.....	4.72	Bethlehem, Pa. B2	.....	5.925	Torrance, Calif. C11
Newman R2	.....	4.72	Canton, O. T7	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Weirton, W. Va. W6
Canton, O. T7	.....	4.675	Clairton, Pa. U5	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Youngstown U5
Clairton, Pa. U5	.....	4.675	Detroit R7	.....	4.825	Bethlehem, Pa. B2	.....	5.925	Youngstown Y1
Detroit R7	4.825	Economy, Mich. G5	5.025	Bethlehem, Pa. B2	5.925	SHEETS, Cold-Rolled Low-Alloy	
Economy, Mich. G5	.....	5.025	Fontana, Calif. K1	.....	5.725	Bethlehem, Pa. B2	.....	5.925	Cleveland J5, R2
Fontana, Calif. K1	.....	5.725	Gary, Ind. U5	.....	5.075	Bethlehem, Pa. B2	.....	5.925	Economy, Mich. G6
Gary, Ind. U5	.....	5.075	Houston S5	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Gary, Ind. U5
Houston S5	.....	4.675	Ind. Harbor, Ind. I-2, Y1	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Indiana Harbor, Ind. Y1
Ind. Harbor, Ind. I-2, Y1	.....	4.675	Lackawanna, N.Y. B2	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Indiana Harbor, Ind. I-2
Lackawanna, N.Y. B2	.....	4.675	Los Angeles B3	.....	5.725	Bethlehem, Pa. B2	.....	5.925	Irvine, Pa. U5
Los Angeles B3	.....	5.725	Massillon, O. R2	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Lackawanna (37) B2
Massillon, O. R2	.....	4.675	Midland, Pa. C18	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Pittsburgh J5
Midland, Pa. C18	.....	4.675	So. Chicago R2, U5, W14	.....	4.675	Bethlehem, Pa. B2	.....	5.925	SparrowsPoint (38) B2
So. Chicago R2, U5, W14	.....	4.675	So. Duquesne, Pa. U5	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Stearns, O. R2
So. Duquesne, Pa. U5	.....	4.675	Struthers, O. Y1	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Weirton, W. Va. W6
Struthers, O. Y1	.....	4.675	Youngstown U5	.....	4.675	Bethlehem, Pa. B2	.....	5.925	Youngstown U5
Youngstown U5	.....	4.675	BAR SHAPES, Hot-Rolled Alloy			Bethlehem, Pa. B2	.....	5.925	Youngstown Y1
BAR SHAPES, Hot-Rolled Alloy			Clairton, Pa. U5	4.925	Bethlehem, Pa. B2	5.925	High-Strength Low-Alloy	
Clairton, Pa. U5	.....	4.925	Gary, Ind. U5	.....	4.925	Bethlehem, Pa. B2	.....	5.925	Cleveland J5, R2

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Butler, Pa. A10	4.575
Cleveland J5, R2	4.575
Corse, Mich. C2	4.775
Fairfield, Ala. T2	4.575
Follansbee, W. Va. F4	5.575
Fontana, Calif. K1	5.575
Gary, Ind. U5	4.575
GraniteCity, Ill. G4	5.275
Ind. Harbor, Ind. I-2, Y1	4.575
Irvin, Pa. U5	4.575
Lackawanna, N.Y. B2	4.575
Middletown, O. A10	4.575
Pittsburg, Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint, Md. B2	4.575
Steubenville, O. W10	4.575
Warren, O. R2	4.575
Weston, W. Va. W6	4.575
WestLechburg, Pa. A4	5.45
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity, Ala. R2	5.075
Ashland, Ky. (8) A10	5.075
Canton, O. R2	5.075
Delphos, O. N16	5.675
Dover, O. R1	5.775
Fairfield, Ala. T2	5.075
Gary, Ind. U5	5.075
GraniteCity, Ill. G4	5.50
Ind. Harbor, Ind. I-2	5.075
Irvin, Pa. U5	5.075
Kokomo, Ind. (13) C16	5.475
MartinsFerry, O. W10	5.475
Niles, O. N12	6.275
Pittsburg, Calif. C11	5.825
SparrowsPoint, Md. B2	5.075
Steubenville, O. W10	5.075
Torrance, Calif. C11	5.825
Weirton, W. Va. W6	5.075

SHEETS, Galvanized No. 10,
High-Strength Low-Alloy

Irvin, Pa. U5	7.625
SparrowsPoint (39) B2	7.775

SHEETS, Galvanized Steel

Canton, O. R2	5.625
Irvin, Pa. U5	5.625
Kokomo, Ind. (13) C16	6.025
Niles, O. N12	6.825

SHEETS ZINCGRIP Steel No. 10

Butler, Pa. A10	5.325
Middletown, O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles, O. R2 (28)	5.925
Weirton, W. Va. W6	5.775

SHEETS, Well Coating

Fontana, Calif. K1	5.54
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BLUED Stock, 29 ga.

Yorkville, O. W10	7.00
Follansbee, W. Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland, Ky. (8) A10	4.925
Cleveland R2	4.925
Gary, Ind. U5	4.925
GraniteCity, Ill. G4	5.625
Ind. Harbor, Ind. I-2	4.925
Irvin, Pa. U5	4.925
Middletown, O. A10	4.925
Youngstown Y1	4.925

TIN PLATE, Electrolytic (Base Box)

Alliquippa, Pa. J5	7.40
Fairfield, Ala. T2	7.50
Gary, Ind. U5	7.40
GraniteCity, Ill. G4	7.60
Indiana Harbor, Ind. I-2, Y1	7.40
Irvin, Pa. U5	7.40
Niles, O. R2	7.40
Pittsburg, Calif. C11	8.15
SparrowsPoint, Md. B2	7.50
Weirton, W. Va. W6	7.40
Yorkville, O. W10	7.40

SHEETS, SILICON (22 Ga. Base)

BeachBottom W10 (cut lengths)	7.20
Brackenridge, Pa. A4	10.95
GraniteCity, Ill. G4 (cut lengths)	10.95
Indiana Harbor, Ind. I-2	7.55
Mansfield, O. E6 (cut lengths)	7.20
Niles, O. N12 (cut lengths)	7.05
Vandergrift, Pa. U5	7.55
Warren, O. R2	7.55
Zanesville, O. A10	7.55

SHEETS, SILICON (22 Ga. Base)

BeachBottom W10 (cut lengths)	7.20
Brackenridge, Pa. A4	10.95
Vandergrift, Pa. U5	10.95
Warren, O. R2	10.95
Zanesville, O. A10	10.95

H.R. or C.R. COILS AND

CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler, Pa. A10 (C.R.)	13.50	14.35	15.35	15.85
Vandergrift, Pa. U5	13.50	14.35	15.35	15.85

BLACK PLATE

(Base Box)

Alliquippa, Pa. J5	6.50
Fairfield, Ala. T2	6.80
Gary, Ind. U5	6.50
GraniteCity, Ill. G4	8.70
Ind. Harbor, Ind. I-2, Y1	6.50
Irvin, Pa. U5	6.50
Niles, O. R2	6.50
Pittsburg, Calif. C11	7.25
SparrowsPoint, Md. B2	6.60
Warren, O. R2	6.50
Weirton, W. Va. W6	6.50
Yorkville, O. W10	6.50

HOLLOWARE ENAMELING

Black Plate (29 gauge)

Follansbee, W. Va. F4	6.10
Irvin, Pa. U5	6.10
GraniteCity, Ill. G4	6.30
Ind. Harbor, Ind. Y1	6.10
Irvin, Pa. U5	6.10
Yorkville, O. W10	6.35

SHEETS, Culvert

No. 16	Cu	Alloy	Cu
Ashland, Ky. A10	5.875		
Canton, O. R2	5.925	6.375	
Fairfield, Ala. T2	5.875	6.125	
Gary, Ind. U5	5.875	6.125	
Ind. Harbor I-2	5.875	6.125	
Irvin, Pa. U5	5.875	6.125	
Kokomo, Ind. C16	6.525		
MartinsFerry, O. W10	5.875		
Pittsburg, Calif. C11	6.625		
SparrowsPt. B2	5.875		
Torrance, Cal. C11	6.625		

SHEETS, Culvert, No. 16

Pure Iron

Ashland, Ky. A10	6.125
Fairfield, Ala. T2	6.125
MartinsFerry, O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron

18 Gauge and Heavier

Ashland, Ky. (8) A10	4.025
Cleveland R2	4.375
Ind. Harbor, Ind. I-2	4.025
Warren, O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler, Pa. A10	5.075
Cleveland R2	5.175
Middletown, O. A10	5.075
Warren, O. R2	5.175

SHEETS, Galvanized Ingot Iron

No. 10 flat

Ashland, Ky. (8) A10	5.325
Canton, O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler, Pa. A10	5.575
Middletown, O. A10	5.575

SHEETS, ALUMINIZED

Butler, Pa. A10	8.425
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TIN PLATE, American 1.25

Coke (Base Box) lb	lb
Alliquippa, Pa. J5	\$8.70 \$3.95
Fairfield, Ala. T2	8.80 9.05
Gary, Ind. U5	8.70 8.95
Ind. Har. I-2, Y1	8.70 8.95
Irvin, Pa. U5	8.70 8.95
Pitts., Cal. C11	9.45 9.70
Sp. Pt. Md. B2	8.80 9.03
Warren, O. R2	8.70 8.95
Weirton, W. Va. W6	8.70 8.95
Yorkville, O. W10	8.70 8.95

0.25 lb 0.50 lb 0.75 lb

7.40	7.65	8.05
7.50	7.75	8.15
7.40	7.65	8.05
7.60	7.85	8.25
7.40	7.65	8.05
7.40	7.65	8.05
7.40	7.65	8.05
8.15	8.40	8.80
7.50	7.75	8.15
7.40	7.65	8.05
7.40	7.65	8.05

Arma- Elec- Dyna-

Field	ture	ric	Motor	ma
7.85	7.85	9.10	9.90	
8.35	8.35	9.60	10.40	
8.55	8.55	9.80		
7.55	7.85	(34)	(41)	
7.20	7.35	7.85	9.10	9.90
7.05	7.35	7.85		
7.85	7.85	9.60	10.40	
7.55	7.85	9.60	10.40	
7.85	7.85	9.60	10.40	

72 65 58 52

10.45	11.00	11.70	12.50
10.95			
10.95	11.50	12.20	13.00
10.95			
10.95	11.50	12.20	13.00

T-100 T-90 T-80 T-73

13.50	14.35	15.35	15.85
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MANUFACTURING TERNES

(Special Coated)

Fairfield, Ala. T2	\$7.85
Gary, Ind. U5	7.75
Irvin, Pa. U5	7.75
Yorkville, O. W10	7.75
SHEETS, LT. Coated Ternes, 6 lb	
Yorkville, O. W10	\$8.65

SHEETS, Mig. Ternes, 8 lb

(Commercial Quality)

Gary, Ind. U5	\$9.75
Yorkville, O. W10	9.75

SHEETS, Long Terme Steel

(Commercial Quality)

BeechBottom, W. Va. W10	5.475
Gary, Ind. U5	5.475
Mansfield, O. E6	6.05
Middletown, O. A10	5.475
Niles, O. N12	6.275
Weirton, W. Va. W6	5.475
SHEETS, Long Terme, Ingot Iron	
Middletown, O. A10	5.875

ROOFING SHORT TERNES

(8 lb Coated)

Gary, Ind. U5	9.75
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STRIP, Hot-Rolled

High-Strength Low-Alloy

Bessemer, Ala. T2	5.65
Conshohocken, Pa. A3	5.90
Ecorse, Mich. G5	6.30
Fairfield, Ala. T2	5.65
Fontana, Calif. K1	5.65
Gary, Ind. U5	5.65
Ind. Har., Ind. I-2	5.65
Ind. Harbor, Ind. Y1	6.15
Lackawanna, N.Y. B2	5.70
Los Angeles (25) B3	6.40
Seattle (25) B3	6.65
Sharon, Pa. S3	5.65
So. San Francisco (25) B3	6.40
SparrowsPoint, Md. B2	5.70
Warren, O. R2	5.65
Weirton, W. Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled

High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover, O. G6	8.00
Ecorse, Mich. G5	8.15
Lackawanna, N.Y. B2	7.90
Sharon, Pa. S3	7.30
SparrowsPoint, Md. B2	7.90
Warren, O. R2	7.30
Weirton, W. Va. W6	7.95
Youngstown Y1	7.80
STRIP, Hot-Rolled Carbon	
Ala. City, Ala. (27) R2	3.725
Alton, Ill. L1	4.20
Ashland, Ky. (8) A10	3.725
Atlanta A11	4.275
Bessemer, Ala. T2	3.725
Bridgeport, Conn. (10) S15	4.225
Buffalo (27) R2	3.725
Butler, Pa. A10	3.725
Carnegie, Pa. S18	4.225
Conshohocken, Pa. A3	4.125
Detroit M1	4.40
Ecorse, Mich. G5	4.025
Fairfield, Ala. T2	3.725
Fontana, Calif. K1	5.175
Gary, Ind. U5	3.725
Houston, Tex. S5	4.125
Ind. Harbor, Ind. I-2, Y1	3.725
Johnstown, Pa. (25) B2	3.725
Kanawha, N.Y. (9) S5	4.325
Lackawanna, N.Y. (32) B2	3.725
Los Angeles (25) B3	4.475
Milton, Pa. B6	4.35
Minneapolis, Colo. C10	4.775
New Britain (10) S15	4.225

Key to Producers

A1	Acome Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A7	American Steel & Wire
A8	Anchor Drawn Steel Co.
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A13	American Cladmetals Co.
B1	Babcock & Wilcox Co.
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B6	Bohler Steel Corp.
B8	Braburn Alloy Steel
B11	Buffalo Bolt Co.
B12	Buffalo Steel Div., H. K. Porter Co.
B14	A. M. Byers Co.
C1	Calstrip Steel Corp.
C2	Calumet Steel Div. Borg-Warner Corp.
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp.
C7	Cleve. Cold Rolling Mills
C8	Cold Metal Products Co.
C9	Colonial Steel Co.

N. Tonawanda, N.Y. B11	3.725
Pittsburg, Calif. C11	4.475
Riverdale, Ill. A1	4.475
San Francisco S7	5.00
Seattle (25) B3	4.725
Seattle N14	4.75
Sharon, Pa. S3	4.225
So. Chicago, Ill. W14	3.725
So. San Francisco (25) B3	4.475
SparrowsPoint, Md. B2	3.725
Sterling, Ill. N15	4.475
Torrance, Calif. C11	4.725
Warren, O. R2	3.725
Weirton, W. Va. W6	3.825
WestLechburg, Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeport, Conn. (10) S15	6.05
Carnegie, Pa. S18	6.45
Fontana, Calif. K1	7.30
Gary, Ind. U5	6.10
Houston, Tex. S5	6.50
Kansas City, Mo. S5	6.70
Midland, Pa. C18	5.85
New Britn., Conn. (10) S15	6.05
Sharon, Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson, Ind. (40) G6	5.50
Bridgeport, Conn. (10) S15	5.80
Butler, Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn, Mich. D3	6.05
Detroit D2	5.60
Gary, Ind. U5	5.45
Dover, O. G6	5.50
Ecorse, Mich. G5	5.30
Follansbee, W. Va. F4	5.10
Fontana, Calif. K1	6.75
Franklin Park, Ill. (40) T6	5.35
Ind. Harbor, Ind. I-2	5.35
Lackawanna, N.Y. B2	5.10
Los Angeles C1	6.85
Mattapan, Mass. T6	5.95
Middletown, O. A10	5.10
New Britain (10) S15	5.80

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2

Warren, O. R2	4.325
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San Francisco, C10 6.175
SparrowsPoint, Md. B2 6.325
Sterling, Ill. (1) N15 5.225
Struthers, O. Y1 5.225
Torrance, Calif. C11 6.175
Waukegan, Ill. A7 5.225
Worcester, Mass. A7 5.525
WIRE, Cold-Rolled Flat
Anderson, Ind. G6 6.325
Alquippa, Pa. W12 (43) 6.20
Cleveland A7 (43) 6.20
Crawf'sville, Ind. M8 (48) 7.0
Dover, O. G6 6.20
Fostoria, O. S1 (43) 6.0
Kokomo, Ind. C16 (43) 5.5
Franklin Park, Ill. T6 (43) 6.20
Massillon, O. R8 (43) 5.85
Monessen, Pa. P16 (43) 6.35
Monessen, Pa. P7 (43) 6.10
Nash, R.I. (1) N8 (43) 6.15
Trenton, N.J. R5 6.20
Worcester, Mass. W12 (43) 6.55
Worcester, Mass. T6 (43) 6.55
Worcester, Mass. W12 (43) 6.60
WIRE, Galv'd ACSR for Cores
Bartville, Ill. K4 8.90
Monessen, Pa. P16 (43) 8.50
Muncie, Ind. I-7 (43) 8.70
Roebing, N.J. R5 (43) 8.80
Struthers, Md. B2 (43) 8.80
Johnstown, Pa. B2 (43) 8.85
ROPE WIRE
Alton, Ill. L1 (43) 8.75
Bartville, Ill. K4 8.95
Buffalo W12 (43) 8.95
Fostoria, O. S1 (43) 8.85
Johnstown, Pa. B2 (43) 8.85
Monessen, Pa. P16 (43) 8.50
Monessen, Pa. P7 (43) 8.80
Muncie, Ind. I-7 (43) 8.75
Nash, R.I. W12 (43) 8.75
Portsmouth, O. P12 (43) 8.65
Roebing, N.J. R5 (43) 8.85
SparrowsPt. B2 (43) 8.85
Struthers, O. Y1 (43) 8.85
Worcester J4, T6 (43) 8.85
(A) Plow and Mild Plow
add 0.25c for improved plow
WIRE, MD Spring, High Carbon
Alquippa, Pa. J5 (43) 6.25
Alton, Ill. L1 6.25
Bartville, Ill. K4 6.60
Buffalo W12 (43) 6.25
Cleveland A7 (43) 6.25
Donora, Pa. A7 (43) 6.25
Duluth, Minn. A7 (43) 6.25
Fostoria, O. S1 (43) 6.25
Johnstown, Pa. B2 (43) 6.25
Millbury (12) N6 (43) 8.05
Minneapolis, Colo. C10 (43) 8.05
Monessen, Pa. P7 (43) 6.25
Monessen, Pa. P16 6.25
Muncie, Ind. I-7 (43) 8.45
Palmer, Mass. W12 (43) 6.50
Pittsburg, Calif. C11 (43) 7.25
Roebing, N.J. R5 (43) 6.25
Portsmouth, O. P12 (43) 6.25
So. Chicago, Ill. R2 (43) 6.25
San Fran, C10 (43) 7.20
Sterling, N.J. Md. A7 (43) 6.25
Struthers, O. Y1 (43) 6.25
Trenton, N.J. A7 (43) 6.55
Waukegan, Ill. A7 (43) 6.25
Worcester A7, T6 (43) 6.55
Worcester, Mass. W12 (43) 6.55
Worcester, Mass. J4 (43) 6.75
WIRE, Upholstery Spring
Alquippa, Pa. J5 6.75
Alton, Ill. L1 6.50
Buffalo W12 6.75
Cleveland A7 6.75
Donora, Pa. A7 6.75
Duluth, Minn. A7 6.75

Johnstown, Pa. B2	..... 6.22
Los Angeles B3	..... 7.22
Minneapolis, Minn. C10	..... 6.52
Minneapolis, Colo. C10	..... 6.52
Monessen, Pa. P7	..... 6.22
Monessen, Pa. P16(42)	..... 6.52
New Haven, Conn. A7	..... 6.57
Palmer, Mass. W12	..... 6.52
Pittsburg, Calif. C11	..... 7.22
Portsmouth, O. P12	..... 6.22
Roebeling, N.J. R5	..... 6.57
Roebeling, N.J. R5	..... 6.57
So. San Francisco C10	..... 7.22
So. San Francisco C10	..... 7.22
Sparrows Point, Md. B2	..... 6.37
Torrance, Calif. C11	..... 7.22
Trenton, N.J. A7	..... 6.22
Waukegan, Ill. A7	..... 6.57
Worcester, Mass. A7	..... 6.27
WIRE, Fine and Weaving 18" Coils	
Alton, Ill. L1 (43)	..... 9.12
Bartonville, Ill. K4	..... 9.42
Bartonville, Ill. K4	..... 9.42
Chicago W13	..... 8.92
Cleveland A7 (43)	..... 8.92
Crawfordsville, Ind. M8 (43)	..... 8.92
Postoria, O. S1 (43)	..... 8.92
Johnstown, Pa. B2 (43)	..... 8.92
Kokomo, Ind. C16 (43)	..... 8.92
Monessen, Pa. P16 (43)	..... 8.92
Muncie, Ind. I-7 (43)	..... 9.12
Palmer, Mass. W12 (43)	..... 9.12
Roebeling, N.J. R5 (43)	..... 9.12
Waukegan, Ill. A7 (43)	..... 8.92
Worcester, Mass. A7, T6 (43)	..... 8.92
WIRE, Tire Bead	
Bartonville, Ill. K4	..... 11.52
Monessen, Pa. P16 (43)	..... 11.52
Roebeling, N.J. R5 (43)	..... 11.52
WOVEN FENCE, 9-15½" Ga. Coils	
Alabama City, Ala. R2	..... 13.22
Ala. City, Ala. R7-17-18ga. R2	..... 13.22
Atlanta A11, Pa. 9-14½ ga. J5	..... 13.52
Atlanta A11	..... 13.52
Bartonville, Ill. (19) K4	..... 13.22
Crawfordsville, Ind. M8	..... 13.22
Donora, Pa. A7	..... 13.22
Duluth, Minn. A7	..... 13.22
Fairfield, Ala. T2	..... 13.22
Houston, Tex. S5	..... 13.22
Johnstown, Pa. B2	..... 13.22
Johnstown 17ga., "6" B2	..... 13.22
Kansas City, Mo. S5	..... 13.22
Kokomo, Ind. C16	..... 13.22
Minneapolis, Colo. C10	..... 14.62
Monessen, Pa. P7	..... 13.22
Pittsburg, Calif. C11	..... 13.22
Rankin, Pa. A7	..... 13.22
So. Chicago, Ill. R2	..... 13.22
Sterling, Ill. (1) A15	..... 13.22
*On 14c zinc; \$17.5c zinc.	
FENCE POSTS	
Chicago Htts., Ill. C2	..... 14.22
Duluth, Minn. A7	..... 13.22
Franklin, Pa. F5	..... 14.22
Huntington, W. Va. W7	..... 14.22
Johnstown, Pa. B2	..... 14.22
Marion, O. P11	..... 14.22
Minneapolis, Colo. C10	..... 13.22
Moline, Ill. R2	..... 13.22
Palmer, Mass. W12	..... 14.22
Tonawanda, N.Y. B12	..... 14.22
Williamsport, Pa. S19	..... 15.22
WIRE, Barbed	
Alabama City, Ala. R2	..... 14.22
Alliquippa, Pa. J5	..... 14.82
Atlanta A11	..... 14.22
Bartonville, Ill. (19) K4	..... 14.22
Crawfordsville, Ind. M8	..... 14.22
Donora, Pa. A7	..... 14.22
Duluth, Minn. A7	..... 14.22
Fairfield, Ala. T2	..... 14.22
Houston, Tex. S5	..... 15.22
Johnstown, Pa. B2	..... 14.22

Joliet, Ill. A7	.....1
Alabama City, Mo. S5	.....1
Kokomo, Ind. C16	.....1
Minneapolis, Colo. C10	.....15
Monessen, Pa. P7	.....1
Pittsburgh, Calif. C11	.....1
Rankin, Pa. A7	.....1
So. Chicago, Ill. R2	.....1
So. San Fran., Calif. C10	.....16
SparrowsPoint, Md. B2	.....1
Steeling, Ill. (1) N15	.....1
*Based on 14c zinc; \$17.50 per ton zinc.	
BALE TIES, Single Loop	
Alabama City, Ala. R2	.....1
Atlanta A11	.....1
Bartonville, Ill. (19) K4	.....1
Crawfordsville, Ind. M8	.....1
Donora, Pa. A7	.....1
Duana, Minn. A7	.....1
Fairfield, Ala. T2	.....1
Joliet, Ill. A7	.....1
Kansas City, Mo. S5	.....1
Kokomo, Ind. C16	.....1
Minneapolis, Colo. C10	.....1
Pittsburgh, Calif. C11	.....1
So. Chicago, Ill. R2	.....1
So. San Fran., Calif. C10	.....1
SparrowsPoint, Md. B2	.....1
Steeling, Ill. (1) N15	.....1
TRUCK TIES, Single Loop	
Kansas City, Mo. S5 (46)	.....9
Lebanon, Pa. (31) B2	.....9
Minneapolis, Colo. C10	.....9
Pittsburgh O3, P14	.....9
AXLES	
Ind. Harbor, Ind. S13	.....5
Johnstown, Pa. B2	.....5
NAILS, Stock	
To dealers & mfrs. (7) C	
Alabama City, Ala. R2	.....1
Alquippa, Pa. J5	.....1
Atlanta A11	.....1
Bartonville, Ill. (19) K4	.....1
Chicago, Ill. W13	.....1
Cleveland A9 (44)	.....1
Crawfordsville, Ind. M8	.....1
Donora, Pa. A7	.....1
Duana, Minn. A7	.....1
Fairfield, Ala. T2	.....1
Galveston, Tex. D7	.....1
Houston, Tex. E5	.....1
Johnstown, Pa. B2	.....1
Joliet, Ill. A7	.....1
Kansas City, Mo. S5	.....1
Kokomo, Ind. C16	.....1
Minneapolis, Colo. C10 (44)	.....1
Monessen, Pa. P7	.....1
Pittsburgh, Calif. C11	.....1
Portsmouth, N.H. P12	.....1
Rankin, Pa. A7	.....1
RAILS	
Bessemer, Pa. U5	.....1
Ensley, Ala. T2	.....1
Fairfield, Ala. T2	.....1
Gary, Ind. U5	.....1
Pittsburgh, W. Va. W7	.....1
Indiana Harbor, Ind. I-2	.....1
Johnstown, Pa. B2	.....1
Lackawanna, N.Y. B2	.....1
Minneapolis, Colo. C10	.....1
Steeltown, Pa. B2	.....1
Williamsport, Pa. S19	.....1
* Per net ton.	
TOOL STEEL	
(Prices subject to 4.7% increase)	
Grade	\$ p
Regular Carbon	.....

32	So. Chicago, Ill.	R2
33	SparrowsPt., Md.	B2
34	Sterling, Ill.	(1) N15
35	Torrance, Calif.	C11
36	Worcester, Mass.	A7
37	STAPLES, Polished, Stock
38	To dealers & mfrs. (7)
39	Alabama City, Ala.	R2
40	Alliquippa, Pa.	J5
41	Atlanta	A11
42	Bartonville, Ill.	(19) K4
43	Chicago	A13
44	Cincinnati	M8
45	Donora, Pa.	A7
46	Duluth, Minn.	A7
47	Fairfield, Ala.	T2
48	Johnstown, Pa.	B2
49	Joliet, Ill.	A7
50	Kokomo, Ind.	C16
51	Minneapolis, Colo.	C10 (45)
52	Monessen, Pa.	B2
53	Pittsburg, Calif.	C11
54	Portsmouth, O.	P12
55	Rankin, Pa.	A7
56	So. Chicago, Ill.	R2
57	SparrowsPt., Md.	B2
58	Sterling, Ill.	(1) N15
59	Torrance, Calif.	C11
60	Worcester, Mass.	A7
61	NAILS, Cut (100 lb keg)
62	To dealers (33)
63	Cochran, W.Va.	A3
64	Wheeling, W.Va.	W10
65	TIE PLATES
66	Fairfield, Ala.	T2
67	Gary, Ind.	U5
68	Ind. Harbor, Ind.	I-2
69	Lackawanna, N.Y.	B2
70	Minneapolis, Colo.	C10
71	Pittsburg, Calif.	C11
72	Seattle B3
73	Steele, Pa.	B2
74	Torrance, Calif.	C11
75	* Per net ton
76	JOINT BARS
77	Bessemer, Pa.	U5
78	Fairfield, Ala.	T2
79	Ind. Harbor, Ind.	I-2
80	Joliet, Ill.	U5
81	Lackawanna, N.Y.	B2
82	Minneapolis, Colo.	C10
83	Seattle B3
84	STANDARD TIE SPIKES
85	Ind. Harbor, Ind.	I-2, Y1-6
86	Kansas City, Mo.	S5
87	Lebanon, Pa.	B2
88	Minneapolis, Colo.	C10
89	Pittsburgh J5
90	Seattle B3
91	So. Chicago, Ill.	R2
92	Steele, Pa.	Y1
93	Youngstown R2
94	Std.	Std.	All	Std. Ter
95	No. 1	No. 2	No. 2	6 Ur
96	3.775	3.675	3.725	4
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98	3.775	3.675	3.725	4
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13 Precision Drawn Steel
 14 Pitts. Screw & Bolt Co.
 15 Pittsburgh Metallurgical
 16 Page Steel & Wire Div.,
 Amer. Chain & Cable
 17 Plymouth Steel Co.
 18 Reeves Steel & Mfg. Co.
 19 Republic Steel Corp.
 20 Rhodeland Steel Corp.
 21 Roebling's Sons, John A.
 22 Rome Strip Steel Co.
 23 Rotary Electric Steel Co.
 24 Reliance Div., Eaton Mfg.
 25 Seneca Wire & Mfg. Co.
 26 Sharon Steel Corp.
 27 Sharon Tube Co.
 28 Sherrill & Sons Corp.
 29 Shenango Furnace Co.
 30 Simmons Co.
 31 Simonds Saw & Steel Co.
 32 Sloss-Sheffield S.&I. Div.
 33 Standard Forgings Corp.
 34 Standard Tube Co.
 35 Stanley Works
 36 Struthers Iron & Steel
 37 Superior Forge & Wire Co.
 38 Superior Steel Corp.
 39 Sweet's Steel Co.
 40 Southern States Steel
 41 Seidhuber Steel

T2	Tenn. Coal & Iron Div.
T3	Tenn. Prod. & Chem.
T4	Texas Steel Co.
T5	Thomas Strip Division,
T6	Pittsburgh Steel Co.
T7	Thompson Wire Co.
T8	Timken Roller Bearing
T9	Tonawanda Iron Div.,
	Am. Rad. & Stan. San.
U4	Universal Cypress Steel Co.
U5	Utah Steel & Iron Corp.
U6	Utah Steel & Iron
U7	Vulcan Crucible Steel Co.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Co.
W4	Washington Steel Corp.
W5	Weirton Steel Co.
W6	W. Va. Steel & Mfg. Co.
W7	West. Auto. Mach. Screw
W8	Wheatland Tube Co.
W9	Wheeling Steel Corp.
W10	Wickwire Spring Steel
W11	Widener & Fuel Iron Co.
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div.
	International Harvester
W15	Woodward Iron Co.
W16	Wyckoff Steel Co.
Y1	Youngstown Sheet & Tube

Oil Hardening	0
5% Cr Hot Work	0
Hi-Carbon-Cr	0
Grade by Analysis	
W Cr V Co	
18 4 1	1.65
20.25 4.25 1.6 12.25	3.585-3
18 2 7	2
18.25 4.25 1 4.75	2
18 4 2 9	2.445-
13.5 4 3	1.
9 3.25 0.5	
W Cr V Mo	
6 4 4.5 1.9 5	0.96-0
6 4 3 6	
1.5 1 1.5	
Tool steel producers incl	
A4, A8, B2, B8, C4, C9,	
C18, D4, F2, J3, L3, M14,	
U4, V2 and V3.	

FOOTNOTES

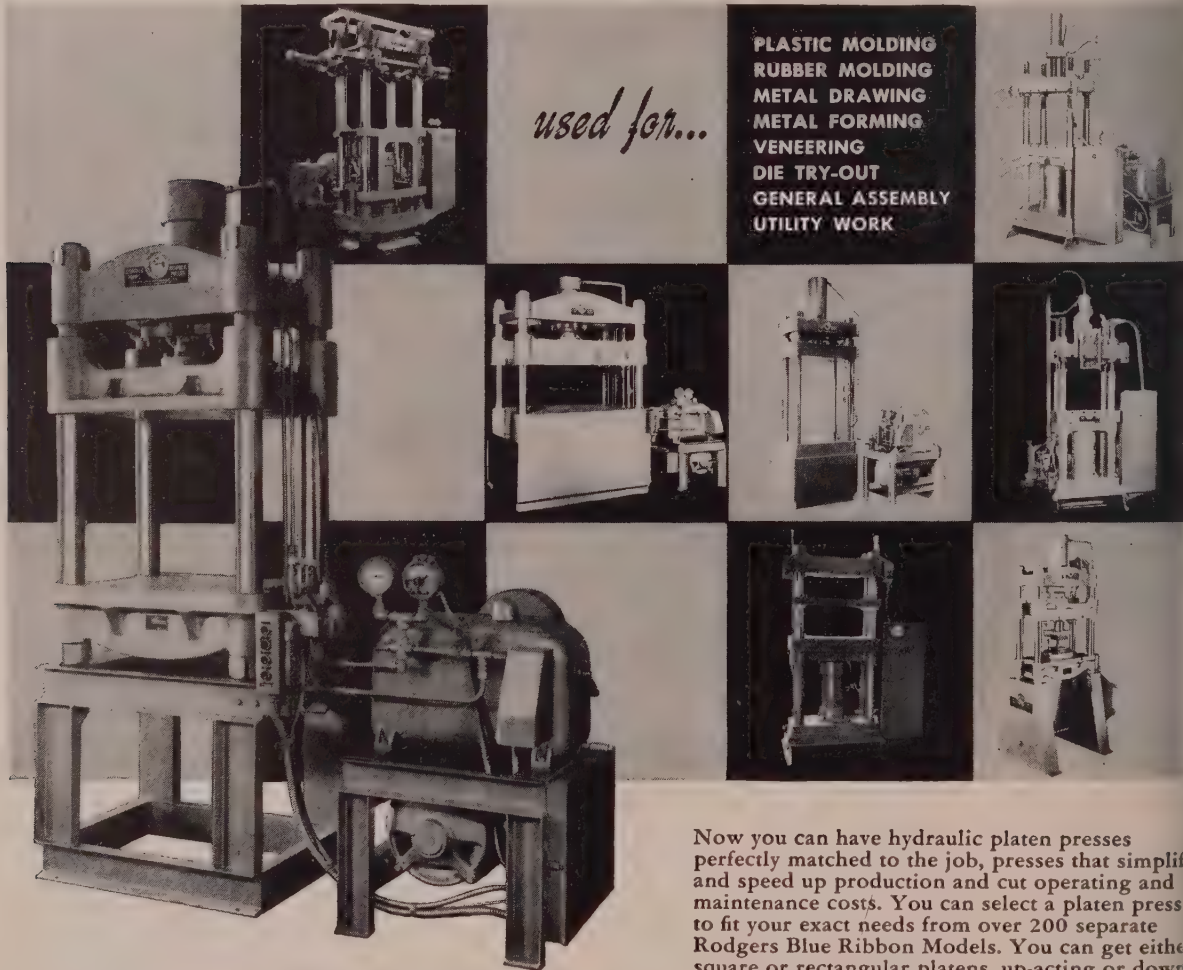
- (1) Chicago base.
- (2) Angles, flats, bands.
- (3) Merchant.
- (4) Reinforging.
- (5) Chicago or Birm. base.
- (6) To Jobbers, 3 cols. lower.
- (7) 18 gage and heavier.
- (8) 6 in. and narrower.
- (9) March base.
- (10) Cleveland & Pitts. base.

350	(21) New Haven, Conn., b
635	(22) Del. San Francisco B
635	area.
	(23) 6" Ga. 36" wide
	(24) Deduct 0.20c, finer t
	15 Ga.
505	(35) Bar mill bands
636	(36) Reinforcing, mill
675	lengths, to fabricat
676	to consumers, 5.05c.
125	(40) Bar mill sizes.
125	(41) Reinforcing, mill
021	Add \$31.50 per ton,
.025	Sheared; add 0.35c
	universal mill.
	(31) 10' to 35'
	(32) Rd. or square edge
965	(33) To Jobbers, deduct 2
965	(34) 7.55c for cut lengths
1810	(35) 4" and 5" wide
19:	(36) 54" and narrower.
113,	(37) 15 gauge & lighter:
838,	& narrower
	(38) 16 gauge & lighter:
	48" & narrower.
	(39) 48" and narrower.
	(40) Lighter than 0.935";
	0.935" and heavier,
	0.25c higher.
	(41) 9.10c for cut lengths
	(42) Plus 0.375c per 100
	Plus 4.75c on base
	extras.
	(44) Plus 45c per 100 lb.
	(45) Plus 40c per 100 lb.
	(46) Plus 2.25c per 100
	(28) Reinforcing, mill,

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and

Here's the new Rodgers blue ribbon line of platen presses designed for power, performance and economy on all types of production jobs!

- POWER — from 10 to 500 tons pressure!
- PERFORMANCE — for precision work on all types of material!
- ECONOMY — simple, rugged design — easy to service!



used for...

PLASTIC MOLDING
RUBBER MOLDING
METAL DRAWING
METAL FORMING
VENEERING
DIE TRY-OUT
GENERAL ASSEMBLY
UTILITY WORK

Write for the new illustrated
Rodgers Blue Ribbon Catalog No.
320 giving complete speci-
fications on 229 different models!

Now you can have hydraulic platen presses perfectly matched to the job, presses that simplify and speed up production and cut operating and maintenance costs. You can select a platen press to fit your exact needs from over 200 separate Rodgers Blue Ribbon Models. You can get either square or rectangular platens, up-acting or down-acting, with a selection of hand, power driven or combination pumps to suit your work.



Rodgers Hydraulic, Inc.

7423 Walker St., St. Louis Park, Minneapolis 16, Minn. **HYDRAULIC POWER EQUIPMENT**

TWELVE STANDARD PIPE, T & C

Carload discounts from list, %

—Inches	5.5c	11.5c	17c	1 1/4	1 1/2	2	2 1/2	3
Per Ft.	0.85	1.13	1.68	2.28	2.75c	3.7c	58.5c	78.5c
nds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18	23.50
Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk
Quip, Pa. J5 (†)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5
Ill. L1 (†)	29.5	10.5	32.5	14.5	35	18	35.5	18.5
Wood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5
Pa. N2 (†)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5
ana, Calif. K1 (†)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5
Harbor, Ind. Y1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21
in, O. N3 (†)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25
on, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50
rows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5
ngstown R2 (†)	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75
ngstown Y1 (†)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00
atland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

—Inches	2	2 1/2	3	3 1/2	4	5	6	7	8
Per Ft.	3.7c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	\$2.35	\$2.80
nds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18	23.50	28.00
Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Quip, Pa. J5 (†)	24	6	27	8.25	29	10.25	29	10.25	33.75
bridge, Pa. N2	24	6	27	8.25	29	10.25	29	10.25	33.75
ain, O. N3 (†)	24	12.75	27	12.75	29	14.75	29	14.75	33.75
ngstown Y1 (†)	24	7.50	27	9.25	29	11.25	29	11.25	33.75

CTRIC WELD STANDARD PIPE, T & C

Carload discounts from list, %

—Inches	2	2 1/2	3	3 1/2	4	5	6	7	8
Per Ft.	3.7c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	\$2.35	\$2.80
nds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18	23.50	28.00
Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Quip, Pa. J5 (†)	24	6	27	8.25	29	10.25	29	10.25	33.75
bridge, Pa. N2	24	6	27	8.25	29	10.25	29	10.25	33.75
ain, O. N3 (†)	24	12.75	27	12.75	29	14.75	29	14.75	33.75
ngstown Y1 (†)	24	7.50	27	9.25	29	11.25	29	11.25	33.75

TWELVE STANDARD PIPE, T & C

Carload discounts from list, %

—Inches	5.5c	11.5c	17c	1 1/4	1 1/2	2	2 1/2	3
Per Ft.	0.85	1.13	1.68	2.28	2.75c	3.7c	58.5c	78.5c
nds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18	23.50
Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk
Wood, W. Va. W10	29.5	+0.25	32.5	+3.5	17.75	+7.75	33	14.25
er, Pa. F6 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25
a, Pa. N2 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25
on, Pa. M6 (†)	29.5	-1.75	23	+2.25	18	+5.25	33	14.25
on, Pa. S4 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25
rows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	33	15.75
ngstown R2 (†)	28.5	+0.75	23	+3.75	18	+7.50	33	15.75
ngstown Y1 (†)	28.5	+0.75	23	+3.75	18	+7.50	33	15.75
atland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.75

vanized pipe discounts based on zinc price of (†), 14c; (‡), 12.50c; (**), 11.50c; (*), with discounts adjusted depending on price of zinc at time of shipment.

STAINLESS STEEL

(Add 4.7% to extras where new extra cards have not been issued)

Type	Sheets	C.R.	Strips	Struct.
301...	44.25	36.50	33.75	33.75
302...	44.50	39.75	34.00	33.75
303...	46.50	43.50	36.50	33.75
304...	46.50	41.75	35.50	33.75
309...	60.00	59.25	48.25	33.75
316...	61.50	63.50	53.00	33.75
321...	53.00	52.00	40.00	33.75
347...	58.00	56.50	44.75	33.75
410...	39.00	32.75	27.50	33.75
416...	40.00	40.00	28.00	33.75
420...	41.50	33.25	28.00	33.75
501...	29.25	27.75	15.25	33.75

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS	CONNELLVILLE	NEW RIVER	WISSE COUNTY	WISSE COUNTY
Connellsville, fur. \$14.50-15.00	Connellsville, fur. \$14.50-15.00	New River foundry... 20.80	Wisse county foundry... 15.95	Wisse county, fur. \$15.20
OVEN FOUNDRY COKE	KEARNEY	EVERETT	NEW ENGLAND	CHICAGO
Kearney, N. J. ovens \$24.00	Everett, Mass. ovens... 25.50	New England, del. \$26.05	Chicago ovens... 24.50	Chicago, del. 26.00
Terre Haute, ovens... 24.05	Milwaukee, ovens... 25.25	Indianapolis, ovens... 24.25	Chicago, del. 28.12	Cincinnati, del. 25.85
Cincinnati, O. ovens... 25.50	Cleveland, del. 27.43	Errie, Pa. ovens... 25.00	Birmingham, ovens... 21.65	Cincinnati, del. 26.58
LoneStar, Tex. ovens... 18.50	Philadelphia, ovens... 23.95	Swedeland, Pa. ovens... 23.85	St. Louis, ovens... 26.00	St. Louis, del. 26.00
Pomona, O. ovens... 24.00	Cincinnati, del. 26.82	Detroit, ovens... 25.50	Detroit, del. 26.50	Buffalo, del. 28.08
Flint, del. 28.23	Pontiac, del. 27.06	Saginaw, del. 28.58	*Or within \$4.55 freight zone from works.	

COAL CHEMICALS

Spot, cents per gallon, ovens	Pure benzol	Toluol	Industrial xylol	Per ton, bulk, ovens	Sulphate of ammonia	Birmingham area	Cents per pound, ovens	Phenol	40 carlots, non-returnable drums
36.00	36.00	30.00-33.00	30.00-33.00	34.45	\$49.50	48.00	48.00	48.00	48.00

NOTE: Current prices on clad steels appeared on page 131, Mar. 23 issue.

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective	CaF ₂ content 70%, \$43; 60%, \$40.	Imported, net ton, duty paid, metallurgical grade, \$30-\$35.
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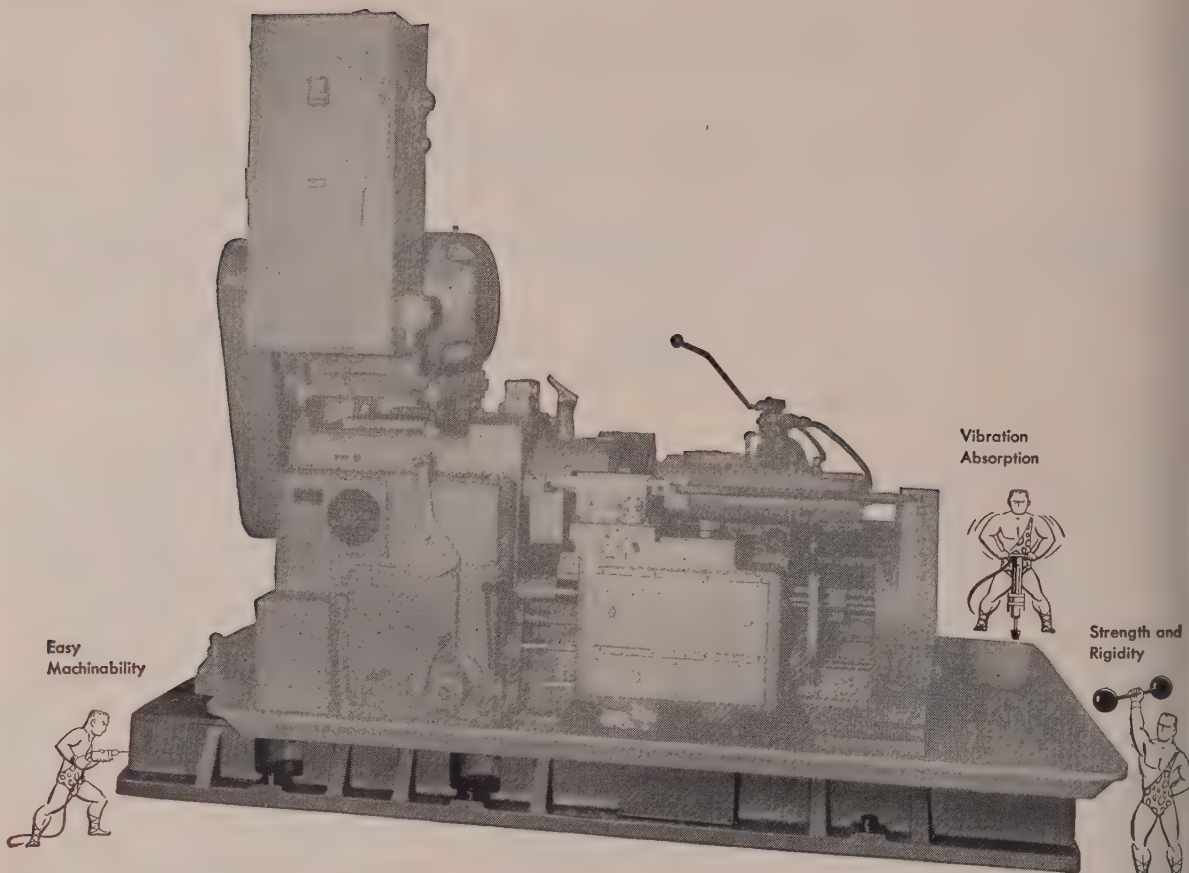
BOILER TUBES

base c.l. prices, dollars per 100 ft., mill; minimum thickness, cut lengths 10 to 24 ft., inclusive.

B.W.	Seamless	—Elec. Weld—
Gage	H.R.	C.D.
13	14.19	16.71-17.77
13	16.97	19.80-21.22
13	18.22-18.77	22.08-22.82
13	20.35-21.35	24.92-25.49
13	22.81-23.93	27.94-28.58
13	25.69-26.66	31.38-32.18
13	28.40-29.36	34.35-35.58
12	31.28-32.17	37.33-39.19
12	33.87-34.82	40.09-44.44
12	35.78-36.87	42.11-44.93

OLTS, NUTS

ARRIAGE, MACHINE BOLTS	$\frac{3}{4}$ -in. to 1 $\frac{1}{4}$ -in.	26
o.b. midwestern plants;		
cent off list for less than		
se lots to consumers)		
in. and shorter:		
$\frac{3}{4}$ -in. & smaller diam.	15	
$\frac{3}{4}$ -in. & $\frac{3}{4}$ -in.	18.5	
$\frac{3}{4}$ -in. and larger	17.5	
onger than 6 in.:		
All diams.	14	
ig bolts, all diams.:		
6 in. and shorter	23	
over 6 in. long	21	
bbed Necked Carriage	18.5	
ank	34	
lw	34	
re, Elevator, Tap and		
Sleigh Shoe	21	
re Bolts	21	
iller & Fitting-Up Bolts	31	
SQUARE HEAD SET SCREWS		
(Packaged; per cent off list)		
1 in. diam x 6 in. and		
shorter	38	
1 in. & smaller diam.		
x over 6 in.	28	
HEADLESS SET SCREWS		
(Packaged; per cent off list)		
No. 10 and smaller	35	
$\frac{3}{4}$ -in. diam. & larger	18	
N.F. thread, all diams.	10	
STEEL STOVE BOLTS		
(F.o.b. plant, per cent off		
list in packages)		
Plain finish	43 & 10	
Plated finishes	31 & 10	
HEXAGON CAP SCREWS		
(1020 steel; packaged; per		



Let's get down to cases ABOUT BASES!

Gray Iron provides the ideal combination of characteristics for the base of this automatic lathe.

GRAY IRON

Characteristics Include:

- Castability
- Low Notch Sensitivity
- Heat Resistance
- Durability
- Machinability
- Rigidity
- Wear Resistance
- Corrosion Resistance
- Vibration Absorption
- Wide Strength Range

The manufacturer of this automatic lathe had previously used a fabricated steel base. To cut down delivery time and reduce costs, a switch was made to a cast Gray Iron base.

In the manufacturer's own words . . . "in addition to appreciable cost savings, delivery time to our machine shop is about one-eighth that of fabricated steel. Because of the rigidity inherent in the casting, we have a base which is easy to machine, absorbs vibration, and does the kind of a job our customers expect."

When you "get down to cases" about machine tool bases—or any other application requiring the unique combination of advantages listed at the left—be sure to investigate Gray Iron! Write for technical information on the many advantages of the Gray Iron casting process.



Make it Better with Gray Iron • Second largest industry in the Metal-working field

GRAY IRON FOUNDERS' SOCIETY, INC.

NATIONAL CITY-E. 5th BLDG., CLEVELAND 14, OHIO

WAREHOUSE STEEL PRODUCTS

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS		Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡		Carbon	Floor
Baltimore	5.81	7.17	8.32	6.42	...	6.41	7.18	11.17	6.47	7.70
Boston	6.51	7.35	8.39	6.55	...	6.42	7.49	12.37	6.56	7.98
Chicago	5.80	6.65	8.31	6.21	...	5.90	6.95	11.07	6.08	7.67
Cincinnati	5.80	6.65	7.70‡	5.80	...	5.80	7.85	...	5.95	8.15
Cleveland	5.80	6.65	7.90	5.83	...	5.83	6.80	10.65	5.95	7.18
Detroit	6.08	6.67	8.16	6.09	...	6.08	7.11	11.02	6.37	7.55
Galveston	5.80	6.65	8.04	6.00	...	5.89	6.90	10.79	6.28	7.51
Houston	6.23	6.46	8.44	6.08	7.49§	6.12	7.10	10.92	6.42	7.52
Los Angeles	6.74	...	8.67	6.89	...	6.98	...	...	6.82	8.16
New York City	6.26	7.27	8.32	6.56	...	6.59	7.53	9.54	6.39	6.78
Philadelphia	6.60	8.45	9.50	6.75	11.20	6.60	8.65	12.05	6.60	8.90
Pittsburgh	5.97	6.82	8.07	6.00	...	6.00	7.07	10.82	6.12	7.35
Portland, Ore.	6.16	7.00	8.30	6.19	...	6.18	6.91	...	6.30	...
San Francisco	6.26	7.37	8.32	6.56	...	6.69	7.63	11.14	6.49	8.11
St. Louis	7.60	...	...	...	...	6.44	8.70	...	7.25	7.23
Wash. D.C.	6.16	7.18	7.70	6.50	8.30	6.47	7.50	10.89	6.22	7.42
Wichita	5.80	6.65	7.90	5.97	...	5.83	6.90	10.65	5.95	7.18
Yonkers, N.Y.	7.80	9.05	9.75	7.60	...	7.35	9.40	...	7.30	9.25
...	6.14	6.95	8.68	6.53	...	6.30	7.63	...	6.58	7.80
...	6.10	6.94	8.20	6.14	...	6.13	7.20	10.95	6.35	7.58
...	6.47	7.31	8.61	6.50	...	6.49	7.32	...	6.61	7.84
...	6.85	8.15	9.45	6.70	...	6.60	8.65	12.00	6.45	8.85
...	7.36	8.24	9.40	7.40	...	7.08	9.37	12.00	6.83	9.10
...	7.80	9.40	10.15	7.15	...	7.10	9.70	11.80	7.00	9.15
...	6.31	7.61	8.90	6.89	...	6.90	8.03	...	6.93	8.17

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 26-cent bar quality extra; § as rolled; ¶ as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-finished strip, 2000 lb and over; cold-finished bars, 2000 lb and over; ‡—500 to 1499 lb; §—1000 to 1999 lb.

Ores

Lake Superior Iron Ore	
Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% on natural, rail of vessel, lower lake ports.)	
4 range bessemer	\$10.10
4 range non-bessemer	9.85
60% non-bessemer	9.85
60% non-bessemer	9.70
per-hearth lump	10.95
high phosphorus	9.70
The foregoing prices are based on upper lake oil freight rates, lake vessel freight rates, unloading and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date for buyer's account.	

Eastern Local Iron Ore	
Cents per unit del. E. Pa.	
foundry and basic 66-62% concentrates	
contract	17.00

Foreign Iron Ore	
Cents per unit, c.i.f. Atlantic ports	
wedish basic, 60 to 65%:	
Spot	nom.
Long-term contract	22.00
South African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore	
Net ton unit, duty paid	
foreign wolframite and scheelite, per	
net ton unit	\$65.00
domestic scheelite, mines	65.00

Manganese Ore	
Manganese, 48% nearby, \$1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90c-93c.	

Chrome Ore	
Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Ore., or Tacoma, Wash.	

Indian and African	
8% 2.8:1	\$40.00-\$42.00
8% 3:1	44.00-46.00
8% no ratio	32.00-34.00

South African Transvaal	
4% no ratio	\$27.00-\$28.00
8% no ratio	34.00-35.00

Brazilian	
4% 2.5:1 lump	nom. \$32

Domestic	
(Rail nearest seller)	
8% 3:1	\$39.00

Molybdenum	
Sulphide concentrates per lb. molybdenum content, mines	\$1.00

REFRACTORIES

Fire Clay Brick
High-Heat Duty: Pueblo, Colo., \$89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orrison, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parra, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., \$99.30 Salina, Pa., \$104.55; Niles, O., \$109; Los Angeles, Pittsburgh, Calif., \$132.30.

Silica Brick
Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., \$99.30; Hays, Pa., \$106.10; Niles, O., \$107; E. Chicago, Ind., Joliet, Rockdale, Ill., \$109.70; Cutler, Utah, \$116.55; Los Angeles, \$122.85.

Insulating Fire Brick
 2300° F: Massillon, O., \$178.50; Clearfield, Pa., \$179.55; Augusta, Ga., Beaver Falls, Zelenople, Pa., Mexico, Mo., \$186.90.

Ladle Brick
Dry Pressed: Bessemer, Ala., \$64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wells-ville, O., \$69.30; Mexico, Mo., \$73.50; Clearfield, Pa., Portsmouth, O., \$83; Perla, Ark., \$92.40; Los Angeles, \$110.25; Pittsburgh, Calif., \$111.30.

Slceves
 Reesdale, Pa., \$127; Johnstown, Pa., \$127.30; Clearfield, Pa., \$135; St. Louis, \$138; Athens, Tex., \$140.90.

Nozzles
 Reesdale, Pa., \$203.20; Johnstown, Pa., \$208.40; Clearfield, Pa., \$219.45; St. Louis, \$224.65; Athens, Tex., \$225.20.

Ranagers
 Reesdale, Pa., \$158.20; Johnstown, Pa., \$161.70; Clearfield, Pa., \$168.60; St. Louis, \$170.30; Athens, Tex., \$174.40.

High-Alumina Brick
 50 Per Cent: Clearfield, Pa., St., Louis, Mexico, Mo., \$166.30; Danville, Ill., \$169.30.
 60 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$210.20; Danville, Ill., \$213.20.
 70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$244.85; Danville, Ill., \$247.85; Clearfield, Pa., \$252.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Delivered. Spot add 0.25c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.i. lump, bulk 7.0c per lb of alloy, c.i. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3½ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton lot 16.0c, less ton 16.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.i. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.i. bulk 12.65c, per lb of briquet, c.i. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.i. packed 7.75c, ton lot 8.55c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Contract, carload, bulk 7.1c, c.i. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdenum-Oxide Briquets: (Containing 2½ lb of Mo each) \$1.14 per pound of Mo contained, f.o.b. Langloeth, Pa.

Note: Current prices on chromium, silicon, vanadium, boron and tungsten alloys appeared on page 133, Mar. 23 issue; manganese and titanium alloys and "other" ferroalloys, page 183, Mar. 16.

IRON AND STEEL SCRAP

Open market prices as reported to STEEL, Mar. 26, 1953; gross tons, except as noted. Changes shown in italics.

STEELMAKING SCRAP
COMPOSITE

Mar. 26	\$44.17
Mar. 19	44.17
Feb. 1953	43.00
Mar., 1952	43.00
Mar., 1948	40.21

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Including brokers' Commission)

No. 1 heavy melting...	44.00*
No. 2 heavy melting...	42.00*
No. 1 bundles	44.00*
No. 2 bundles	40.00*
No. 1 busheling	44.00*
Machine shop turnings...	30.00-31.00*
Mixed borings, turnings...	32.00-33.00*
Short shovel turnings...	35.00-36.00*
Cast iron borings	35.00-36.00*
Cut structurals	50.00-51.00*
Heavy turnings	44.00*
Punchings & plate scrap	50.00-51.00*
Electric furnace bundles	46.00*
Cast Iron Grades (Delivered)	
No. 1 cupola	47.00-48.00
Charging box cast	45.00-46.00
Heavy breakable cast	44.00-45.00
Unstripped motor blocks	41.00-42.00
No. 1 machinery cast	51.00-52.00
Railroad Scrap	
No. 1 R.R. heavy melt.	47.00-48.00
Rails, 2-ft. and under	58.00-59.00
Rails, 18-in. and under	59.00-60.00
Rails, random lengths	53.00-54.00
Railroad specialties	55.00-56.50

*Plus applicable freight springboards from other areas.

CLEVELAND

(Delivered consumer plant; including broker's commission)

No. 1 heavy melting...	44.00-44.50*
No. 2 heavy melting...	42.00-42.50*
No. 1 bundles	44.00-44.50*
No. 2 bundles	40.00-40.50*
No. 1 busheling	44.00-44.50*
Machine shop turnings...	30.00-31.00*
Mixed borings, turnings...	33.00-34.00*
Short shovel turnings...	33.00-34.00*
Cast iron borings	33.00-34.00*
Low phos.	49.00-50.00*
Alloy free, short shovel	
turnings	37.00-38.00*
Electric furnace bundles	46.00-46.50*

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	46.00-47.00
Stove plate	45.00-46.00
Heavy breakable cast	44.00-45.00
Unstripped motor blocks	38.00-38.50
Brake shoes	40.00-41.00
Clean auto cast	52.00
No. 1 wheels	46.00-47.00
Burnt cast	40.00-41.00
Drop broken machinery	49.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R. R. Malleable	50.00-51.00
Rails, 3-ft. and under	58.00-60.00
Rails, 18-in. and under	61.00-62.00
Rails, random lengths	56.00
Cast steel	51.00-52.00
Railroad specialties	51.00-52.00
Uncut tires	52.00-53.00
Angles, splice bars	54.00-55.00
Rails, rerolling	56.00

*Plus applicable freight springboards from other areas.

YOUNGSTOWN

(Delivered consumer plant; including broker's commission)

No. 1 heavy melting...	44.00-44.50*
No. 2 heavy melting...	41.50-42.00*
No. 1 bundles	45.00-45.50*
No. 2 bundles	39.50-40.00*
Machine shop turnings...	31.00-32.00*
Short shovel turnings...	32.00-33.00*
Cast iron borings	32.00-33.00*
Low phos.	50.00-51.00*
Electric furnace bundles	47.00-47.50*

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
------------------------	-------------

*Plus applicable freight springboards from other districts.

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting...	nominal
No. 2 heavy melting...	35.50
Machine shop turnings...	25.50
Mixed borings, short	
turnings	29.50
Los phos. (structural &	
plate)	41.00-41.50
Shovel turnings	29.50

Cast Iron Grades

No. 1 cupola	40.00
Unstripped motor blocks	32.00-33.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting...	46.00
No. 2 heavy melting...	41.50-42.00
No. 1 bundles	46.00-47.00
No. 2 bundles	41.00
No. 1 busheling	46.00
Machine shop turnings...	32.50-33.50
Mixed borings, turnings	36.50-37.50
Short shovel turnings...	36.50-37.50
Structurals & plate	49.00-50.00
Heavy turnings	46.00
Couplers, springs,	
wheels	52.00
Cast Iron Grades	
No. 1 cupola	43.00-44.00
Charging box cast	45.00
Heavy breakable cast	46.50
Unstripped motor blocks	37.00-38.00
Drop broken machinery	50.00-51.00

CINCINNATI

(F.o.b. shipping point)

No. 1 heavy melting...	41.35
No. 2 heavy melting...	41.35
No. 1 bundles	42.35
No. 2 bundles	41.35
No. 1 busheling	42.35
Machine shop turnings...	32.35
Mixed borings, turnings	36.35
Short shovel turnings...	36.35
Cast iron borings	36.35
Structural & plate, 1 ft.	
Cast Iron Grades	
No. 1 cupola	45.00
Charging box cast	43.00
Stove plate	41.00
Burnt cast	41.00
Heavy breakable cast	38.00-40.00
Unstripped motor blocks	34.00-35.00
Brake shoes	41.00
Clean auto cast	43.00
Drop broken machinery	49.00-50.00

Railroad Scrap

(Delivered)	
No. 1 R.R. heavy melt.	46.00-47.00
Malleable	49.00-50.00
Rails, 18-in. and under	59.00-60.00
Rails, random lengths	50.00
Rails, rerolling	52.00
DETROIT	
No. 1 heavy melting...	39.00-40.00
No. 2 heavy melting...	38.00-39.00
No. 1 bundles	40.00-41.00
No. 2 bundles	35.00-36.00
No. 1 busheling	40.00-41.00
Machine shop turnings...	34.00-35.00
Mixed borings, turnings	36.00-37.00
Short shovel turnings...	27.00-27.75
Punchings & plate scrap	44.00-46.00
Cast Iron Grades	
No. 1 cupola	47.50
Charging box cast	40.00-42.00
Stove plate	43.00-44.00
Unstripped motor blocks	33.00
Clean auto cast	50.00
Malleable	48.00

BUFFALO

No. 1 heavy melting...	\$46.50-47.50
No. 2 heavy melting...	42.00-43.00
No. 2 bundles	42.00-43.00
No. 1 bundles	43.00-44.00
No. 1 busheling	43.00-44.00
Machine shop turnings...	32.50-33.00
Mixed borings, turnings	36.50-37.00
Short shovel turnings...	26.00-27.00
Low phos.	45.50-49.00

Cast Iron Grades

(F.o.b. Shipping Point)	
No. 1 cupola	42.50-43.00
Drop broken machinery	45.50-46.00

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting...	34.17
No. 2 heavy melting...	31.17
No. 1 bundles	34.17
No. 2 bundles	31.17
Machine shop turnings...	22.17-23.17
Mixed borings, turnings	22.17
Short shovel turnings...	26.17-27.17
No. 1 cast	34.00-35.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast	46.00-47.00

CHICAGO

(Including broker's commission)

No. 1 heavy melting...	42.50*
No. 2 heavy melting...	40.50*
No. 1 bundles	43.50*
No. 2 bundles	38.50*
No. 1 busheling	43.50*
Machine shop turnings...	27.00-28.00*
Mixed borings, turnings	27.00-28.00*
Short shovel turnings...	29.00-30.00*
Cast iron borings	27.00-28.00*
Cut structurals	46.50*
Heavy turnings	41.50*
Electric furnace bundles	45.50*

Cast Iron Grades

No. 1 cupola	43.00-45.00
Stove plate	39.00-41.00
Unstripped motor blocks	39.00-41.00
Clean auto cast	45.00-50.00
Drop broken machinery	46.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-48.00
R.R. Malleable	46.00-48.00
Rails, 2-ft. and under	53.00-55.00
Rails, 18-in. and under	55.00-57.00
Angles, splice bars	52.00-54.00
Rails, rerolling	55.00-57.00

*Plus applicable freight springboards from other areas.

BIRMINGHAM

No. 1 heavy melting...	39.00-40.00
No. 2 heavy melting...	38.00-39.00
No. 1 bundles	39.00-40.00
No. 2 bundles	38.00-37.00
No. 1 busheling	35.00-36.00
Machine shop turnings...	28.00-29.00
Mixed borings, turnings	31.50-32.50
Short shovel turnings...	31.50-32.50
Cast iron borings	31.50-32.50
Cut structurals	43.00-44.00
Heavy turnings	38.00
Punchings & plate scrap	41.50
Electric furnace bundles	41.00

Cast Iron Grades

(F.o.b. Shipping Point)	
No. 1 cupola	43.00-44.00
Charging box cast	39.00-40.00
Stove plate	38.00-39.00
Heavy breakable cast	36.00-37.00
Unstripped motor blocks	35.00-36.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	41.00
Malleable	55.00
Rails, 3-ft. and under	48.00
Rails, 18-in. and under	49.00
Rails, random lengths	49.00-51.00
Cast steel	44.00
Uncut tires	43.00
Angles, splice bars	46.00
Rails, rerolling	48.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting...	40.00
No. 2 heavy melting...	40.00
Machine shop turnings...	28.00
Short shovel turnings...	31.00
Cast Iron Grades	
No. 1 cupola	43.00-45.00
Charging box cast	39.00-41.00
Heavy breakable cast	36.00-38.00
Unstripped motor blocks	33.00-35.00
Brake shoes	41.00
Clean auto cast	46.00-47.00
Burnt cast	37.00-39.00

Railroad Scrap

Malleable	40.00
Rails, 18-inch and under	60.00-62.00
Rails, random lengths...	50.00-52.00
Uncut tires	46.00-48.00
Angles, splice bars	48.00-49.00
Rails, rerolling	50.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting...	30.00
No. 2 heavy melting...	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
Machine shop turnings...	15.00
Mixed borings, turnings	15.00
Short shovel turnings...	15.00
Electric furnace, No. 1	40.00-41.00

Cast Iron Grades

(F.o.b. Shipping Point)	
No. 1 cupola	40.00
Heavy breakable cast	36.00-38.00
Unstripped motor blocks	28.41

No. 1 wheels

47.00

Railroad Scrap

Rails, random lengths. 38.41

SAN FRANCISCO

No. 1 heavy melting...	30.00
No. 2 heavy melting...	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
No. 1 busheling	30.00
Machine shop turnings...	12.00
Mixed borings, turnings	29.00
Short shovel turnings...	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	37.50
Charging box cast	47.00
Stove plate	48.00
Heavy breakable cast	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft. and under	42.00
Rails, 18-in. and under	45.00
Rails, random lengths	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting...	30.00
No. 2 heavy melting...	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
Machine shop turnings...	12.00

Cast Iron Grades

(F.o.b. Shipping Point)	
No. 1 cupola	35.00-41.00

HAMILTON, ONT.

(Delivered Prices)

Heavy Melt.	\$35.5
No. 1 Bundles	35.5
No. 2 Bundles	35.5
Mechanical Bundles ..	31.5
Mixed Steel Scrap	31.5
Mixed Borings, Turnings	28.5
Rails, Remelting	35.5
Rails, Rerolling	38.5
Busheling	28.0
Residing new factory:	
Frop'd	33.5
Unrep'd	31.4
Short Steel Turnings ..	28.5

Cast Iron Grades

No. 1 Machinery Cast ..	50.00
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† F.o.b., shipping point.

OLD CEILING BASE PRICES

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1

Grade 1	No. 1 Bundles Dealer, Industrial	No. Heavy Melting, Railroad
Basing Point		
Alabama City, Ala.	\$39.00	\$41.17
Ashland, Ky.	42.00	44.17
Atlanta, Ga.	39.00	41.17
Bethlehem, Pa.	42.00	44.17
Birmingham, Ala.	39.00	41.17
Brackenridge, Pa.	44.00	46.17
Buffalo, N. Y.	43.00	45.17
Butler, Pa.	44.00	46.17
Canton, O.	44.00	46.17
Chicago, Ill.	42.50	44.17
Cincinnati, O.	43.00	45.17
Claymont, Del.	42.50	44.17
Cleveland, O.	43.00	45.17
Easton, Pa.	42.50	44.17
Conshohocken, Pa.	42.50	44.17
Detroit, Mich.	41.15	43.17
Duluth, Minn.	40.00	42.17

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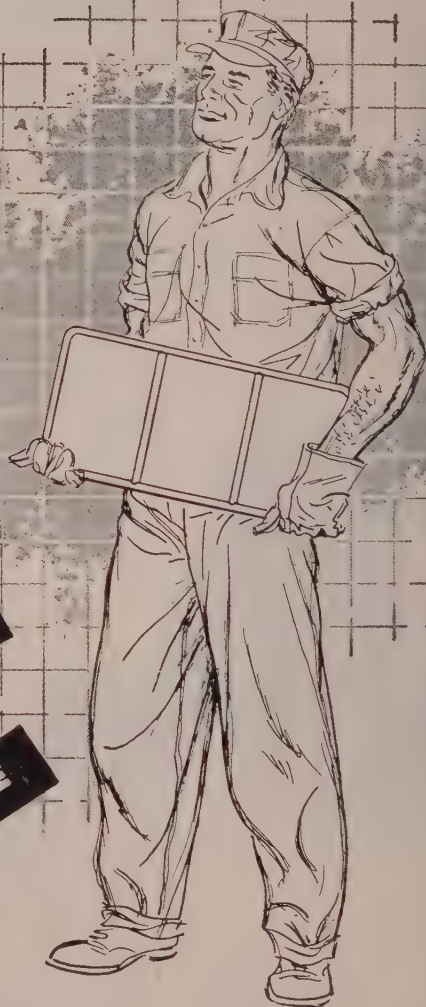
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The Metal Market

The month of March is doing a lot to clarify the trend of the nonferrous metal market. Copper is deemed adequate in supply and the price seems destined to settle at 30 cents

AND LIONS and lambs parallel can be found in March metal markets. The month is ending with only slight-diminished rush and roar that marked its beginning.

As April nears to wind up a month of activity unmatched in years, buyers, sellers and fabricators have a better idea of market direction and trend. In copper, supply is deemed adequate; price is still firm but ultimately due to slide to about 30 cents. The indication that the one-price level will be about there comes from Phelps-Dodge advancing its selling price from 28.50 to 30 cents.

Aluminum shows surprising price stability that's paying off on producers' order books. Scattered rises in aluminum products appear to be the only offshoot of decontrol coming. Zinc and lead have ceased wending their weary way downward, showing signs of strengthening during April. In CMP metals (steel, copper and aluminum), unrated orders can be placed now for delivery after June 30, when DMS goes into effect.

Musical Chairs—The market spotlight still plays strongest on copper, where buyers play a grim game of musical chairs. Every fabricator naturally wants to get his allocation in low-priced domestic copper; if he can't do that he turns to custom smelters and finally to top-price foreign copper sellers. A floating report has it that one purchasing agent filled his April allocation entirely in domestic copper and was forthwith elevated to a vice-presidency.

April supply of domestic copper (estimated at about 80,000 tons of the 135,000 tons allocation) was mostly snapped up in a few hours after tickets were received. Some primary producers and custom smelters limit sales to regular customers, ration on the basis of recent average purchase or post a waiting list. Nobody wants to be holding the bag that gets only foreign copper. Full amount allocated for April probably won't be taken up because of price uncertainty and because no one will build stocks at prevailing prices. February statistics show a higher daily consumption than January, a 10,500-ton gain in new bookings and a dip in reserves of nearly 10,000 tons.

Honey Brings Flies—Fancy U. S. copper prices are attracting foreign suppliers like flies. Metal from com-

panies that haven't traded here for decades is on its way. Northern Rhodesia, Belgian Congo, Germany, Turkey and Yugoslavia have been added to the list of today's sources.

Nonferrous scrap in hands of refiners and ingot makers is now plentiful except for No. 1 copper, and limits on daily intake are common. Most dealers' stocks are low: They got rid of hoarded metal when the market broke and are now unloading as soon as they take it in. March statistics on scrap activity promise to break all existing records. Brass mills hail relaxing of controls on quantity scrap purchases and retention of quality controls. It means they'll have less trouble getting needed grades in bulk which will reduce primary copper needed.

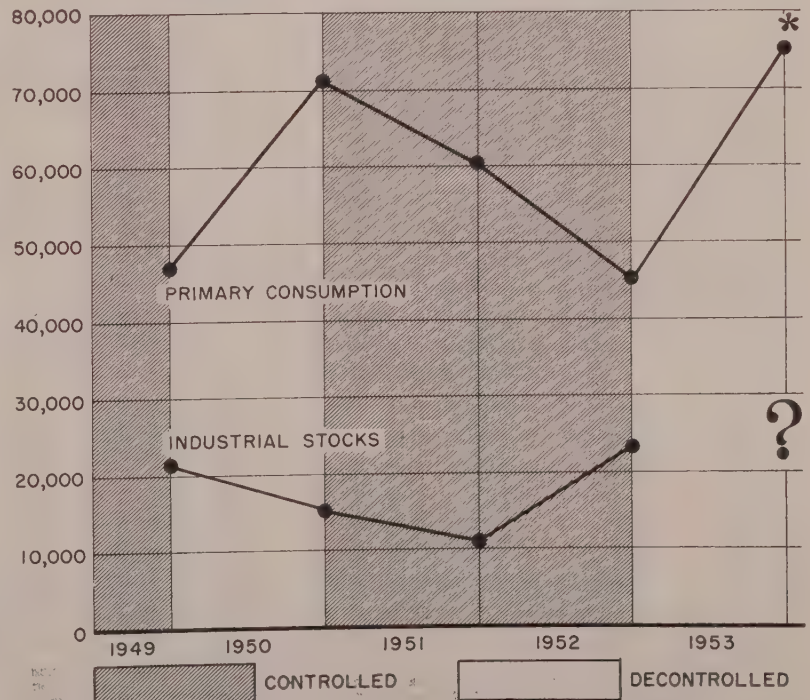
Brass Mill Products Tight

Brass mill products are extremely tight and promise to remain so till

at least the third quarter. So says Herbert Barchoff, executive vice president, Eastern Brass & Copper Co., New York. Here's how he sizes up the next few months: Mill deliveries are generally running two to three months, about a month beyond normalcy. Mills will be going full tilt through June, and after knocking off for the customary two weeks' vacation in July, won't have much trouble filling July order books. In August, holloware, giftware and toy makers start booming for the Christmas trade and generally continue into November.

"Warehouse stocks in general are very good," says Mr. Barchoff. Extended mill deliveries, discouragement of mill orders under 500 pounds and refusal to accept orders under 100 pounds has forced a lot of people to deal with distributors instead of mills. Eastern has noted little buyer resistance since decontrol and thinks transition to free buying will be smooth because no one has suffered from lack of brass for the past 3 to 6 months. Busiest customers today are electronics, appliance and office machinery fields.

TIN: BIG DAY COMING U.S. Primary Tin Requirements—Long Tons



Source: Tin; Tin News

* Estimated; Includes stock replenishment

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 27.50c-34.50c, Conn., Valley; Lake 32.125c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.50c; 85-10-2 (No. 215) 41.75c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 24.00c.

Zinc: Prime western 11.00c; brass special 11.25c, intermediate 11.50c; East, St. Louis; high grade 12.35c, and special high grade 12.50c, delivered.

Lead: Common 13.30c; chemical 13.40c; cor-rod- ing, 13.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 24.00-24.50; No. 12 foundry alloy (No. 2 grade) 23.00-24.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 24.00-25.50 grade 2, 23.00-24.00; grade 3, 22.50-23.50; grade 4, 22.00-23.00.

Magnesium: Commercially pure (99.8%) stand- ard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impuri- ties 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, \$199- \$203, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, \$37.72 per lb of contained beryllium, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, \$2 del; special or patented shapes \$2.15.

Cobalt: 97.99%, \$2.40 per lb for 500 lb (kegs); \$2.42 per lb for 100 lb (case); \$2.47 per lb under 100 lb.

Gold: U. S. Treasury, \$35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: \$90-\$93 per ounce from refineries.

Palladium: \$23-\$24 per troy ounce.

Iridium: \$175-185 per troy ounce.

Titanium (sponge form): \$5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Feb. 27, 1953. Listings are lowest quotations.)

Sheet: Copper 48.98; yellow brass 42.03; com- mercial bronze, 95% 48.49; 90% 47.46; red brass, 85% 45.91; 80% 44.89; best quality, 43.09; nickel silver, 18%, 58.52; phosphor- bronze grade A, 5%, 68.57.

Rod: Copper, hot-rolled 45.33; cold-drawn 46.58; yellow brass free cutting, 35.92; com- mercial bronze 95% 44.18; 90% 47.16; red brass 85%, 45.60; 80%, 44.98.

Seamless Tubing: Copper 48.92; yellow brass 44.94; commercial bronze, 90%, 50.02; red brass, 85%, 48.72.

Wire: Yellow brass 42.32; commercial bronze, 95%, 51.33 90%, 47.75; red brass, 85%, 46.20; 80%, 45.18; best quality brass, 43.78. (Base prices, effective Mar. 3, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 36.04; 30,000 lb. lots, 36.17; 1 c.l. 36.67, Weatherproof, 100,000 lb. 36.75; 30,000 lb. 37.00; 1 c.l. 37.50. Magnet wire del., 15,000 lb or more 42.42; 1 c.l., 42.23.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin
Mar. 13-26	27.50-34.50	13.30	11.00	121.50
Mar. 11-12	27.50-33.00	13.30	11.00	121.50
Mar. 2-10	27.50-32.00	13.30	11.00	121.50
Feb. 25-23	27.50-28.50	13.30	11.25	121.50
Feb. 3-24	24.50	13.30	11.50	121.50
Feb. 2	24.50	13.30	12.00	121.50
Jan. 27-31	24.50	13.80	12.00	121.50
Jan. 22-26	24.50	13.80	12.50	121.50
Jan. 16-21	24.50	13.80	12.50	121.50
Jan. 15	24.50	13.80	12.50	121.50
Jan. 14	24.50	13.80	13.00	121.50
Jan. 12	24.50	13.80	13.00	121.50
Feb. 1953 Avg.	25.136	13.30	11.431	121.50
Jan. 1953 Avg.	24.50	13.838	12.596	121.50
Feb. 1952 Avg.	24.50	18.80	19.50	121.50

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.) Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, Sheet In., In- Base*	Flat Sheet Base	Coiled Sheet Base	Sheet Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.045	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum di- ameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 17S-T4	Hexagonal 17S-T4
0.125	68.8	...
0.150-0.0188	43.0	...
0.219-0.313	45.3	...
0.375	47.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more \$18.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils \$18.00 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill 36.000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36.000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 68.50c. Strip, cold-rolled 62.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 68.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in di- ameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$10; forgings, \$6; hot-rolled and forged bars, \$6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadel- phia, carloads 27.00c; 5 tons and over 27.50c 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled 42.18c; oval 41.68c.

Nickel Anodes: Rolled oval, carbonized, car- loads, 75.00c; 10,000 to 30,000 lb 79.00c; 300 to 10,000 lb 80.00c; 500 to 3000 lb 81.00c 100 to 500 lb, 83.00c; under 100 lb, 86.00c f.o.b. Cleveland.

Nickel Chloride: 37.35c in 100 lb bags, 1 to bags; 3 to 99 bags 35.35c; 34.85c over 1000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers \$1.10 per lb.; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, \$1.42; 500 to 999 lb, \$1.425; 200 to 499 lb, \$1.43; less than 200 lb, \$1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl less than 2000 lb \$1.11; more than 2000 lb \$1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl \$1.25; 100 lb kegs \$1.26, f.o.b. Carteret, N. J. Freight allowed on 100 lb or more.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 15,000 pounds, f.o.b. shipping point. Listings are lowest quotations.)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	27.125	27.125	26.375
Yellow Brass	20.625	20.375	19.500
Commercial Bronze			
95%	25.750	25.500	25.000
90%	24.875	24.625	24.125
Red Brass			
85%	24.000	23.750	23.250
80%	23.000	22.750	22.250
East Quality (71-80%)	21.500	21.250	20.750
Muntz metal	19.375	19.125	18.625
Nickel silver, 10%	24.375	24.125	12.187
Phos. Bronze, A	29.175	28.875	27.875
Naval Brass	19.25	19.00	18.50
Manganese Bronze	19.25	19.00	18.50

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 29.25; No. 2 copper 26.50-27.00 light copper 25.00-25.50; refinery brass (60% copper) per dry copper content 25.50.

INGOT MAKERS' COPPER AND BRASS

SCRAP BUYING PRICES

(Carlots, delivered)

No. 1 copper, nom. 27.00c; No. 2 copper nom. 25.00c; light copper, nom. 23.50c; No. 1 composition borings, 22.00c; No. 1 composition solids, 22.50c; radiators, 16.50c; heavy yellow brass solids, 17.00c; yellow brass turnings 16.50c.

SMELTERS' BUYING PRICES FOR

SCRAP ALUMINUM

(Carlots, delivered)

2S aluminum clippings, 17.00-17.50c; mixed clippings, 15.50-16.00c; old aluminum sheet 14.50-15.00c; old aluminum cast, 14.50-15.00c borings and turnings, 14.50-15.00c.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 25.50-26.00; No. 2 24.00-24.50; light cop- per, 22.00-22.50; No. 1 composition red brass 19.00. No. 1 composition turnings 18.50; mixed brass turnings 13.50; new brass clippings 18.50; No. 1 brass rod turnings 17.00; light brass 12.50 heavy yellow brass 14.50; new brass rod end 17.50; auto radiators, unwashed 15.00; cocks and faucets 16.50; brass pipe 17.50.

Aluminum: Clippings 2S 14.00; old sheets 12.00; crankcase 12.00; borings and turnings 8.00; pistons and struts 6.50.

Tin: No. 1 pewter 70.00; block tin pipe 100.00; No. 1 babbitt 60.00.

Lead: Heavy 10.25-10.75; battery plates 5.25-5.50; linotype and stereotype 12.00-12.50; old troytype 10.25-10.50; mixed babbitt 13.75-14.00.

Zinc: Old zinc, 5.00; new die cast scrap, 5.00; old die cast scrap, 4.00.

Nickel: Sheets and clips 58.00-60.00; rolled anodes 53.00-60.00; turnings 58.00-60.00; rods end 58.00-60.00.

Monel: Clippings 33.00; old sheet 30.00; turn- ings 25.00; rods 33.00.

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2. **Aluminum can save you money on production time and costs because it is free machining, cuts at high speeds and feeds.**

3. **Aluminum can save you money because its recovered scrap has a high value.**

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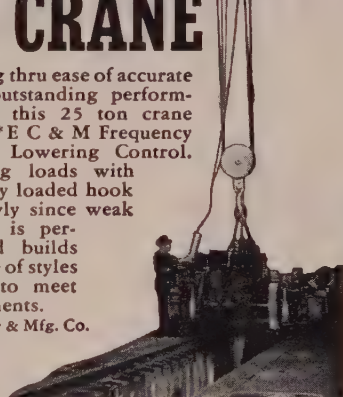


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Steel Bars . . .

Bar Prices, Page 147

Cleveland — There is nothing sight in the market to indicate a substantial lessening in demand for bars for months to come, especially the larger sizes. Military requirements for shells continue to absorb large part of output and indications are shell needs will be even larger second and third quarters. Meanwhile, requirements of the civilian goods industries, notably automotive, are expanding.

Boston — Where preliminary third quarter allocations have been made, reductions in cold-finished bar tonnage are indicated. Most bar grades over 1-inch will remain in limited supply. Small volume of cold-finished for June has moved without ticket. This is the first month in many where any space was open as lead-time approached.

New York — Because of the more extended lead time on alloy bars, sellers of this material have opened books for third quarter. They have done so, however, on a rather conservative basis, pending final word as to details of the program to succeed CMP.

Philadelphia — Hot carbon bar producers still confront more business than they can handle in second quarter. In effect they are out of the market until they open their books for the succeeding period.

Sheets, Strip . . .

Sheet and Strip Prices, Page 147 & 148

New York — More sheet conversion tonnage is being negotiated now than for months. There appears to be no question but what a considerable amount of this tonnage will be moving in third quarter, possibly beyond. Import market also reflects inability of buyers to obtain sufficient tonnage from regular mill suppliers, who are more than covered for the second quarter on many items. Hot and cold-rolled carbon sheets and electrical sheets and enameling stock are under special pressure. Possibility of higher prices some time in third quarter may be stimulating pressure to some extent, but the main consideration is to get steel, as indicated by the increasing amount of premium buying, some of which will not be reflected in actual shipments before mid-summer.

Philadelphia — Producers of sheet anticipate substantial carryover into third quarter. This will take precedence over unrated tonnage and it appears the new Defense Material System cannot be made fully effective until possibly late in July. Alloy mill operations will be retarded as a result of the vacation season.

Pittsburgh — Allegheny Ludlum Steel Corp. has received a certificate of necessity allowing quick amortization of 50 per cent of a \$330,000 expansion of strip annealing facilities at West Leechburg, Pa. Shanley Steel Corp. will expand steel coil annealing facilities to the tune of \$400,000 at Farrell, Pa. Quick amortization on 40 per cent of this amount is allowed.

Boston — There is less open-end hot-rolled tonnage available for late second quarter, and preliminary mill allocations for third quarter are getting e

Longer range tightness in sheets strip stems from continued heavyirements of the automobile in-ry. Latter plans to drop high-conversion deals and toss this age direct into mill hoppers in d quarter.

leveland—With automotive and liance industries pressing for all tonnage they can get prospects dim for any early easing in sup-conditions in the sheet and strip kets. Pressure is exceptionally ng for cold-rolled, but hot-rolled, trical and enameling grades also in strong demand. The mills are ked full through second quarter are turning away tonnage re-sts.

incinnati — Order books are full ough second quarter and, in some s, are almost filled through the die of third quarter. Pressure is easing on the smaller mills. Ship-ts are behind 45 to 60 days. Some ntory accumulation is noted.

hicago—Sheet demand, over-ling because of tremendous pres-e from automobile builders, is ex-iding as household appliance eers, optimistic over their sales pec's, seek more generous supply. it, Louis—Demand for galvanized ets has taken a new sprint. The urn may be seasonal. Cold-rolled ets continue in extremely tight ply. Manufacturers of farm upment and household appliances e pressing for deliveries.

Los Angeles—Movement of Jap-ese flat-rolled steel is slowing. eaker demand from fabricators, plied with increased competition on a recent drop in prices of Eu-pean steel is noted.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 147

Seattle—Rolling mills operate at pacity here. Order backlogs are rinking. New public works con-acts await official clearance by ashington. Inquiries for small ton-es are numerous.

Structural Shapes . . .

Structural Shape Prices, Page 147

New York—Bids will be opened pr. 16 on 43,207 tons for the Tappan ee bridge over the Hudson river off ockland county, New York, in con-ection with the state thruway. On ie same date an additional 3500 tons f bridge work for the thruway in lster and Herkimer counties will me up for bids.

Boston—Bridge and girder work in ie larger structural fabricators' acklogs is reflected in more ex-ended deliveries, January, as com-ared with September-October, for eam designed structures. Smaller istrict shops are not so far extend- d, averaging three to four months.

Philadelphia—Structural awards re light but there is growing in-quiry. Contracting should soon be-ome more active. Fabricators' acklogs already are sufficient to eep them going for many weeks.

Pittsburgh—Structural fabricators ee sufficient business in the offing o carry them through January of ext year. One shop currently is rorrying about where to place about

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11 months of work which should be completed by end of summer. It has the tickets to get steel but can find no takers.

Seattle—Bethlehem Pacific Coast Steel Corp. booked 12,000 tons of galvanized shapes for 163 transmission towers for the Bonneville Power Administration 345-kv Chief Joseph-Snohomish line. Plant backlogs are shrinking. It is feared reinstatement of suspended government projects will create a supply bottleneck later.

Wire . . .

Wire Prices, Page 149

Pittsburgh—Manufacturers wire products demand is showing signs of slackening. Some open space is reported for second quarter, and substantial tonnage is expected to be available during third quarter.

Boston—Open-end tonnage for late second quarter includes mostly finer sizes against which all tickets have not been converted into orders. Available in good volume is plain galvanized wire. Upholstery spring wire and cold-heading stock are sold through June.

New York—American Steel & Wire Division, U.S. Steel Corp., will supply from its Trenton, N. J., plant 13,000 tons of wire for cables for the \$614-foot suspension bridge section of a bridge spanning the Straits of Mackinac.

Tubular Goods . . .

Tubular Goods Prices, Page 151

Boston—On direct shipment of merchant steel pipe to consumers suppliers are sold through June. Distributors are passing up 30 to 35 per cent of monthly butt-weld allotments. Up to now this volume has been diverted into direct shipment channels. All seamless under 10-inch finds a ready market. Tubing specialties, mechanical and pressure, are sold through second quarter. Usual seasonal lift in cast iron pipe is somewhat below normal.

Pittsburgh—Producers of seamless pipe expect strong demand through third quarter. Butt-weld pipe is less tight. Current programs and newly announced pipe lines on planning boards are expected to keep demand for oil country goods at a high point most of this year.

Seattle—The cast iron pipe market is showing seasonal improvement. Several sizable tonnages are pending, including 700 tons in two water districts near Seattle, and 175 tons at Astoria, Oreg.

Plates . . .

Plate Prices, Page 147

Philadelphia—With controls after June 30 confined only to needs of the Defense Department and Atomic Energy Commission, plate producers will have the bulk of their tonnage available for distribution as they please in third quarter. Speculation prevails as to what effect de-control will have on production of strip plate.

Pittsburgh—Plate consumers can use all their current allocations through second quarter, and if receipts continue on the same basis as

previously, they have orders that will take up their capacity July through January. Should strip mills current producing plates curtail such production a tighter market than ever for plates will result.

Boston—Heavy and wide plates are sold through second quarter. Armament requirements will be strong through remainder of the year. When plate shops can use lighter gages in narrow and medium widths they are getting more tonnage.

New York—While some plate mills are becoming more current on the commitments, they are still in receipt of more inquiry than they can handle. Producers generally are out of the market for first half.

Chicago—Plate consumers expect the government will allow to expire on June 30 its directive on use of strip mills to roll light plates.

Pig Iron . . .

Pig Iron Prices, Page 146

New York—Blast furnace production in February amounted to 5,881,518 tons, bringing the total for the first two months of the year to 12,445,901 tons, or 97 per cent of capacity, according to the American Iron and Steel Institute. Operations averaged 96.6 per cent in February. Production during the month was comprised of 5,813,202 tons of pig iron and 68,316 tons of ferroalloys. Iron output in the first two months this year amounted to 12,195,283 tons and ferroalloy output, 150,618 tons. Comparative figures are given in the following table:

BLAST FURNACE PRODUCTION

	(Gross Tons)		
	February 1953	January 1953	February 1952
Pig iron	5,813,202	6,482,081	5,722,615
Ferroalloys	68,316	83,302	61,615
Total	5,881,518	6,565,383	5,784,230

New York—Demand for foundry pig iron here is none too pressing. There has been little improvement in foundry operations, with most shops at about 70 per cent of normal and most in a fairly comfortable position as to iron inventories.

Boston—While most of the production of the Everett furnace was shipped during March, consumers have brought up inventories on the basis of current melt and more tonnage expected to go into stockpiles in April. Melt changes little.

Buffalo—Early vessel shipments of merchant pig iron continue heavy from this lake port. Michigan and local automotive foundries are active buyers in the merchant iron market.

Philadelphia—The pig iron market is steady here with little change in movement of either basic or foundry grades. Gray iron foundry operations are lagging and foundry grades are plentiful. The Chester, Pa. furnace was scheduled to be blown in this past weekend. Feature of the market is the purchase by the Claymont, Del. consumer of 60,000 tons of Australian basic iron at prices understood to be fully competitive with the domestic market. The first 20,000 tons are scheduled for delivery within the next four to five months.

Chicago—Demand for pig iron holds all the strength it has been displaying in recent weeks. Foundries serving the automotive industry are busy and those supplying

household appliance field are fitting from larger releases for earnings.

Cleveland—Not much change in the iron market situation is noted here. Merchant sellers are disposing of their available tonnage but they are more aggressively pressing sales. Foundry operations continue spotty.

Louis—Minor reshuffling in consumer pig iron allocations is under way as production improves. Quotas have not been boosted materially for April.

Iron Ore . . .

Metallurgical Coke Prices, Page 151

Cleveland—Marking one of the best lake shipping season openings on record, ore carriers are beginning to move toward the head of the lakes. Expectations are the first frosts will be coming down to lower ports shortly.

Latest data of the Lake Superior Ore Association show total shipments on Mar. 1 were 29,948,749 tons, comparing with 29,207,749 on Mar. 1 a year ago. Consumption of ore during February was off 10%, reflecting the shorter month. It was reported at 7,395,994 tons, comparing with 8,292,985 in January and 7,233,310 in February 1952. Cumulative consumption this year to date is 5,688,579 gross tons, against 14,769,262 in the like period of last year.

Scrap . . .

Scrap Prices, Page 154

Pittsburgh—The scrap market is described as steady. Now that the heat of inclement weather and possible curtailment of scrap yard operations seem unlikely, mills are reducing their inventories. Purchases are mostly of the best quality grades of No. 1 steel. Prices are being quoted on No. 2 bundles \$1 to \$2 under a week ago.

Cleveland—Noticeably weaker tone is developing in scrap here. Buying has been at a standstill with the mills deciding on their substantial stocks to support current high-level ingot production. One mill will not purchase as much tonnage for April as had been expected. As a result, a line of \$2 to \$3 per ton on No. 1 heavy melting steel is anticipated in some quarters. Last week No. 2 heavy melting was quoted off about \$1 at \$42.50, and turnings were down about \$1. Foundry grades of scrap are moving sluggishly but for the time being prices are unchanged. Railroad ties are strong but unchanged pending placing of April lists.

Detroit—Despite rising labor costs and strong demand, scrap trade observers in this area see prices as holding steady or dropping slightly in the period ahead. Scrap men are somewhat surprised by the brisk business levels of the past few weeks.

New York—Tone of the scrap market is easier, but confusion with regard to prices for No. 1 heavy melting steel continues. Leading buyers are out of the market. Recent high prices for low phosphorus brought out considerable material with the result that shavers shaved buying prices to a range of \$41 to \$41.50.

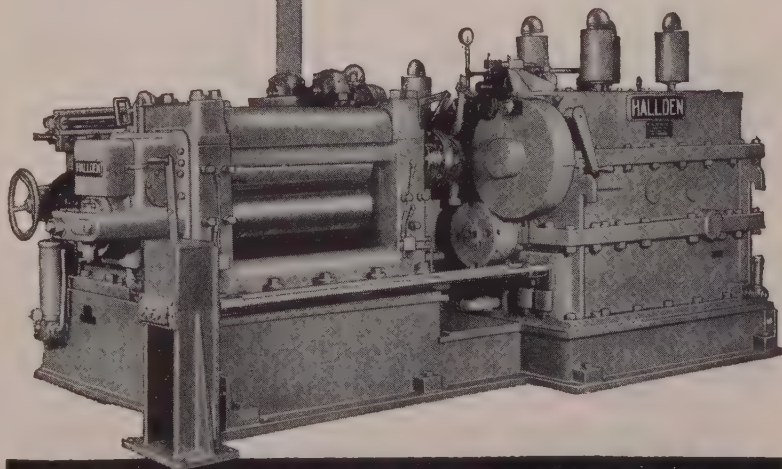
Buffalo—Prices on cast scrap hold unchanged but dealers report buying

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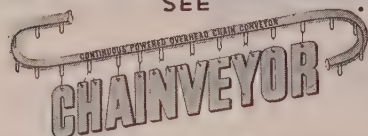
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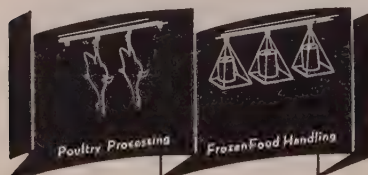


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interest low. Price on No. 1 heavy melting steel is quoted up about \$2 per ton to a range of \$46.50 to \$47.50.

Philadelphia—Steel scrap prices remain unchanged with top grades largely nominal. The situation is still confused although an early test of prices on No. 2 heavy melting is expected with some new contracts under negotiation. Cast grades are unchanged with demand moderate.

Cincinnati—Scrap shipments are in good volume. Dealers are not holding back tonnage. Mills have substantial inventories. Dealer grades in April are apt to be priced higher than lower, particularly No. 2 bundles.

Chicago—Mill purchases of steel-making scrap last week for April delivery confirmed prices which have been prevailing here. No. 1 grades remain at former OPS ceilings. No. 2 bundles at \$38.50 delivered, including commission, are off \$4 a ton from former ceilings. Blast furnace grades are listless and the price level has sagged \$2 a ton. There is little trading in foundry items and prices vary considerably.

St. Louis—No. 2 bundles are off \$2 to \$4 here on heavy buying at the lower figure in Chicago. Softening was hastened when a big local consumer lifted an embargo on deliveries but quickly replaced it with a 1-car-a-day rationing order. No. 1 steel is holding steady.

Birmingham—Scrap remains inactive, especially since the district's largest user holds temporarily out of the market. Cast grades are not in particularly strong demand. Supplies are moderate.

Los Angeles—With mill buying subdued, scrap prices are tending toward lower levels. One major steel producer is out of the market on all grades. Beginning Apr. 1, mills will price No. 3 bundles at \$3 less than No. 2 bundles.

San Francisco—Recently established lower prices and comfortable mill inventories are tending to give the steel scrap market a sluggish appearance. Deliveries are slow.

Seattle—Mill scrap inventories are at a point where large consumers feel they are in better position than at any time since the war. Receipts are ample. However, since the drop in mill prices recently shipments have decreased.

Warehouse . . .

Warehouse Prices, Page 153

Cleveland—District warehouse operators' order volume is increasing under pressure from rising seasonal demands. Opening up of the construction season is reflected in a stepup in requirements for building steel products. Manufacturing operations are being pushed at fast pace in this area and the shortage of certain products at mill level, notably cold-rolled sheets and large bars, is placing an added burden on distributors.

Boston—Higher sales mark March volume with warehouses, but sales are retarded by want of balance in stocks.

Pittsburgh—Balanced warehouse inventories are still a long way off. A few mills are behind on shipments which does not ease the distributors' problem of supplying their customers with all they need. Some warehouses

complain the shipment lag is almost 30 days.

Cincinnati—Inventories are spotty. Galvanized sheets continue to move slowly. Hot and cold-rolled sheet face strong demand. Structurals are in tight supply. There are some indications of inventory accumulation.

Los Angeles—One fabricator here a buyer of warehouse steel, measure his success in getting tonnage by the number of telephone calls required to locate his needs. Current Score: 1 gage galvanized, 6 calls; hot-rolled pickled and oiled, 10 calls.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 151

Chicago—Foundry coke shipment have never become current since the surge in demand in February when consumers found inventories too low. Stocks are reasonably good now but shipments are running about a week behind.

Canada . . .

Toronto, Ont.—Production of primary iron and steel shapes in Canada in December, 1952, amounted to 393,805 net tons against 388,331 in November and 375,867 in December, 1951. Shipments for sale were 258,722 net tons compared with 250,067 in November and 247,555 in December, 1952.

For all of 1952 production totaled 4,850,068 net tons compared with 4,800,820 tons in 1951. Shipments for the full year were 3,139,114 net tons compared with 3,121,007 tons in 1951.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

70,000 tons, superstructure, including truss spans and suspension bridge, Straits of Mackinac, Michigan, to American Bridge Division, U. S. Steel Corp.
12,000 tons, galvanized transmission towers for Bonneville Chief Joseph-Snohomish 34-kv line, to Bethlehem Pacific Coast Steel Corp., San Francisco, low, \$2,844,406.
5400 tons, 26-story office building, Webb Knapp, West 34th St., New York, to Bethlehem Steel Co., Bethlehem, Pa.
1050 tons, Scott Paper Co.'s plant addition, Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Howard S. Wright Co. Inc., Seattle, and American Pile Driving Co. Inc., Everett, awarded general contract, 500 tons, organization maintenance shop, Richardson, Alaska, to Leckenby Structural Steel Co., Seattle; Lease & Leightman, Seattle, general contractors.
205 tons, warehouse, David O. Evans, Hilsie, N. J., to Bethlehem Steel Co., Bethlehem, Pa.
200 tons, gates and equipment, Box Canyon dam, Washington state, to Pacific Car Foundry Co., Seattle.
100 tons, power house, Crown Zellerbach Paper Co., Port Angeles, Wash., to Isaacson Iron Works, Seattle.
Unstated, 7½-ton gantry crane for Lookout Point dam, to Judson Pacific Murphy Co., Emeryville, Calif., low \$33,162 to U. Engineer, Portland, Ore.

STRUCTURAL STEEL PENDING

43,207 tons, Tappan Zee bridge over Hudson off Rockland county, New York, bids Apr. 16; bids will be taken separately on 17,000 tons for east and west approach spans, truss and stringer type on existing bents and 26,207 tons for steel bents on existing concrete foundations and main spans, cantilever truss with suspended span, or a combination of both; approximately 900 tons of approach work for this project were

ad a few weeks ago with American
nge Division, United States Steel Corp.,
burgh.
ons, state thruway, Ulster county, New
Y., bids Apr. 16; J. S. Bixby, district
neer, Poughkeepsie, N. Y.
ons, hangars No. 2 and 3, Kirtland Air
d base; bids to Corps of Engineers,
querque, N. Mex., Apr. 2.
ons, state thruway, Herkimer county,
York, bids Apr. 16; L. Ketchum, dis-
t engineer, Utica, N. Y.
ons, reconstruction of viaduct, Buffalo,
F. Stimm Inc., low on general contract.
ons, factory, Hercules Powder Co., Hope-
l, Va.; bids Mar. 31.
ons, power plant extension, naval ship-
d, Boston.
ons, plant addition, Budd Co., Philadel-
a; bids closed Mar. 27.
ons, shop, Pennsylvania railroad, Hollis-
sburg, Pa.; bids Apr. 1.
ons, pumps and equipment, including 75
s of reinforcing bars, six pumping plants,
olumbia Basin project; bids to Bureau of
clamation, Ephrata, Wash., Apr. 16.
ated, steel frame, steam and boiler plant,
ctor testing station; bids to Atomic En-
y Commission, Idaho Falls, Idaho, early
ril.

REINFORCING BARS . . .

REINFORCING BARS PLACED

ons, Bromley Park housing project, Bos-
n, to Joseph T. Ryerson & Son Inc.,
umbridge, Mass., through M. S. Kelliher
n, Boston, general contractor.
ons, state bridge, New York state thru-
ay, Montgomery county, N. Y., two con-
acts, to Bethlehem Steel Co., Bethlehem,
a., through B. Perini & Sons Inc., Fram-
gham, Mass., general contractors.
ons, Scott Paper Co. expansion, Ev-
ett, Wash., to unstated California sup-
plier.
ons, Tacoma Light Department to
orthwest Steel Rolling Mills Inc., Seattle;
ids for public utilities shop building, called
y Tacoma, Apr. 13.

REINFORCING BARS PENDING

0 tons, Market Terminal building, Boston.
stated, 8-story dormitory, 300 student ca-
acity; bids to Rev. A. A. Lemieux, presi-
ent, Seattle University, Apr. 8.

PLATES . . .

PLATES PENDING

0 tons, Water District No. 42, Seattle; bids
in, several schedules.

PIPE . . .

CAST IRON PIPE PLACED

00 tons, 4 to 14-inch, Worcester, Mass., to
Warren Pipe & Foundry Co., Everett, Mass.
0 tons, 6 to 16-inch, Yarmouth, Mass., to
R. D. Wood Co., Florence, N. J.
0 tons, 8 to 12-inch, Canton, Mass., to R.
D. Wood Co., Florence, N. J.

CAST IRON PIPE PENDING

50 tons, Water District No. 42, Seattle; bids
in.
0 tons, 8-inch, Springfield, Mass.; bids in.
50 tons, water system, Winslow, Wash.,
Hanson Construction Co., Seattle; low gen-
eral contract, \$80,044; Reliable Welding
Works, Olympia, Wash., low \$9619 for steel
reservoir.
75 tons, John Day Water District, Astoria,
Oreg., 6 and 4-inch; bids Apr. 1.

STEEL PIPE PENDING

800 tons, 36 and 48-inch steel pipe, Spring-
field, Mass.; R. Zoppo, Roslindale, Mass.,
general contractor.

RAILS, CARS . . .

RAILROAD CARS PLACED

Pacific Fruit Express, 200 seventy-ton re-
frigerator cars to own shops, Roseville, Calif.
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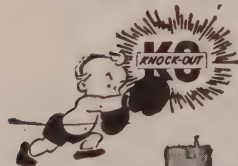
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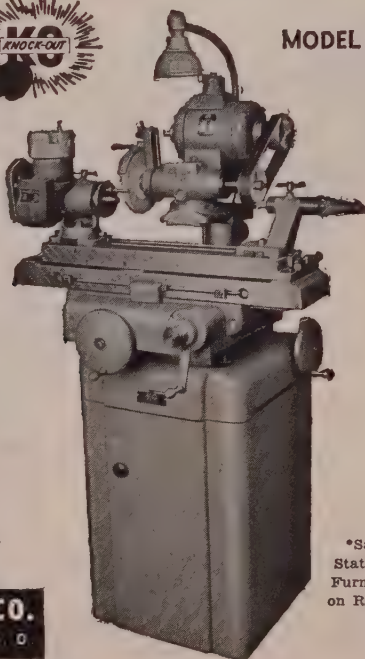


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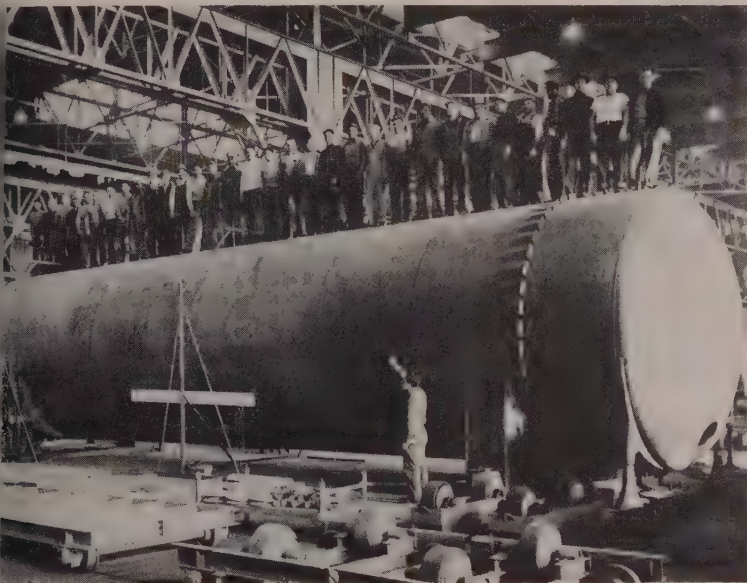
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Metalworking Notes



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Each of the 32 men standing atop this 54-foot long brewery storage tank poured ten glasses of water into it daily, it would necessitate $8\frac{1}{2}$ years for men to fill the tank. Pfaudler Co., Rochester, N. Y., asserts that it is among the largest single-unit metal glass-lined tanks in the U.S. It weighs 25 tons

Complete Construction Plans

Construction plans have been completed for the Pennsylvania Railroad's scrap and reclamation project at Hollidaysburg, Pa.

New Weapon against Cancer

Tracerlab Inc., Boston, developed a needle injecting radioactive wire into the human body. Made radioactive at the Oak Ridge atomic energy pile, the wire gives off cancer-attacking rays. The instrument is being used and studied at Boston's Massachusetts General Hospital.

Buys E-Z Mills Property

National Carbon Co. bought the E-Z Mills property in Bennington, Vt., vacant since last July. After extensive modernization, work will start on defense contracts.

W. E. Bassett Opens Plant

W. E. Bassett Co., makers of nail clippers and manicure implements, opened a new plant at Derby, Conn. The new building contains 25,000 square feet of floor space.

Big Gains for Flexible

In five years, Flexible Tubing Co., Guilford, Conn., jumped from zero to \$2 million in annual sales. The com-

me New Distributors

Newly-named distributors in Arizona and Louisiana for products of Chalmers Mfg. Co., Milwaukee, Jongeward Electric Motors Inc., Ma, Ariz., and Electrical Distributors Inc., Lake Charles, La.

lled Alloys Now Independent

Roll Alloys Inc., Detroit, formerly a division of Michigan Steel Casting Co., is now an independent company handling rolled mill forms of chrome-nickel alloys.

onor Two with Award

Joseph B. Tate of Witt Cornice Co., Cincinnati, and Frederick C. Brightly of Brightly Galvanized Products Co., Cicero, Ill., were presented the Thomas M. Gregory Memorial Award in 1951 and 1952 respectively at the American Hot Dip Galvanizers Association's annual meeting. The award is presented in honor of outstanding contributions to the industry.

anges Subsidiary's Name

Diamond Alkali Co., Cleveland, changed the name of its subsidiary, Alkali Chemical Works Inc., to Diamond Alkali Organic Chemicals Division Inc.

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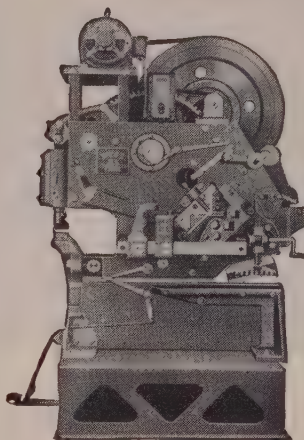


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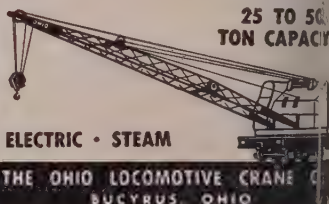
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A good machine in the hands of a good operator will have a long, productive life. We hope this booklet will help you get the most out of your Caterpillar Shovel.



Teaching Shovel Operation by Comic Strips

Designed to instruct rather than entertain, a comic strip distributed by Caterpillar Tractor Co., Peoria, Ill., shows excavators how to use cable and hydraulic shovels. Printed in four colors, the comic contains no Mickey Mouse but illustrates operation of such Caterpillar products as a T7 cable traxcavator shovel.

..., expecting a 30 per cent general increase in 1953, produces lightweight flexible tubing made of wire and plastic-coated fabric. Started in 1947 with two employees, Flex-Tubing now has a modern plant with more than 200 workers.

Damages Plant

West Side Structural Steel Co., Jersey City, N. Y., was extensively damaged by a recent fire. One building was destroyed and one damaged.

Billings on Forgings Double

Consolidated Industries Inc., West Chester, Conn., reports that net billings on aircraft forgings for the first two months of this year were double the billings for the same period in 1952. Consolidated Industries produces titanium forgings.

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Luria To Build for Lenox

Lenox Inc., Trenton, N. J., contracted with Luria Engineering Co., Bethlehem, Pa., for construction of a 144,000-square-foot plant at Cologne, N. J. About 600 workers will be employed at the new building.

AEC Plant Starts Operation

A new chemical processing plant at a testing station of the Atomic Energy Commission in Idaho Falls, Idaho, began operation. The plant will recover fissionable material from used reactor fuel elements.

Beloit Wins Machine Contract

Beloit Iron Works, Beloit, Wis., will build newsprint machines for Great Northern Paper Co., Millinocket, Me., on a \$32 million contract.

Joseph H. Field Honored

Joseph H. Field, manager of the steel window and door department of Ceco Steel Products Corp., Chicago, was elected chairman of the board of directors of the Steel Window Institute.

U. S. Hoffman Converts Shops

U. S. Hoffman Machinery Corp. is spending about \$23 million for machine tools and facilities to convert the former Lackawanna Railroad locomotive shops in Scranton, Pa., to ordnance production.

Canadian Agent Named

Peerless Brothers Agencies Ltd. of Vancouver, B. C., will be Canadian representatives for Continental

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Heads Tool Engineers

Roger F. Waindle was elected president of the American Society of Tool Engineers at the annual meeting in Detroit. Mr. Waindle is vice president, Cannon-Muskegon Corp. and director of research, Nugent Sand Co. Inc. Both firms are in Muskegon, Mich.

Equipment Co., Coraopolis, Pa., manufacturers of butterfly valves.

Maremont Buys Two Companies

Maremont Automotive Products Inc., Chicago, purchased two Cleveland companies. The firms are Accurate Parts Mfg. Co. and Replacement Unit Co. Both will be operated

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Brown & Sharpe #3 Vertical Miller.
Cincinnati #3 El-Power, Vertical Miller.
Hall Planetary Style D Miller.
Gould & Eberhardt 96 H Hobber.
Head #50 Internal Grinder.
Sellers 4T Tool Grinder, motor drive.
Sellers 6T Tool Grinder, late type.
Landis 16 x 72 Plain Cylindrical Grinder.
Brown & Sharpe #12 Plain Grinder, reversing mechanism.
Head #70A Internal Grinder.
Head #73 Centerless Internal & Cylindrical Grinder, late type, complete.
Head 42 Borematic.
Jones & Lamson 8 x 31 Thread Grinder.
Head 72-A3 Plain Internal Grinder.
Lodge & Shipley 16" x 6" single pulley drive, 12 spindle speeds.
American 16" x 8" 3 SCD, 56" center distance, 1 1/4" hole in spindle.
Blount Model B-3 Special Application Lathe for Turning, 20" swing, 2 1/2" hole in spindle, 54" centers.
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Fellows 725 Gear Shaper with Spur Gull.
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Lodge & Shipley 18" x 126" centers, H. Lathe, Timken bearing, complete taper attachment, late type.
Niles 48" x 48" x 16" Double Housing Planer, 4 heads, box table, DC reversible drive.
Landis 26" x 168" Plain Cylindrical Gr.
American 30" x 14" G.H. Lathe, 12 speed.
Monarch 24" x 12" G.H. Lathe, complete.
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Bliss #58 Drawing Press, 5" stroke.
Pond 84 x 84 x 16" Double Housing Planer, DC motor drive, 4 heads.
Cincinnati #2 Centerless Grinder.
Cincinnati-Bickford 3 1/2" Radial Drill.
Hanchett No. 600-86" UK Traveling Face Grinder, new 1946, table 72" x 84" long, 100 HP grinding wheel motor.
Baker #217 Upright Drill Press.
Gisholt 1L Saddle Type Turret Lathe, bar feed, late type.
Milwaukee 2H Plain Miller, late type.
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Manufacturer of steel joists, deck and culvert pipe; steel fabricator of structural, reinforcing and miscellaneous iron; warehousing of related steel specialties. Operation 9 southwestern states; present volume 3000 tons monthly. Position requires promotion of products to architects and engineers, and selling to contractors and owners. Prefer man 35 to 45 years. Excellent opportunity for experienced producer. Write Box 700, STEEL, Penton Bldg., Cleveland 13, Ohio.

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as wholly-owned subsidiaries of Maremont.

Wiesner-Rapp Expands

Wiesner-Rapp Co. Inc., Buffalo, purchased Kelley Electric Machine Co. of that city as part of its expansion and diversification program. Kelley manufactures machines used in laying concrete.

American Steel Foundries, East Chicago, Ind., won the Technical Operating Gold Medal for 1952. J. A. Rassenfoss was awarded the annual Steel Foundry Facts prize. is assistant research director American Steel Foundries.

Adds to Branch Plant

Black & Decker Mfg. Co., Towson, Md., portable electric tool manufacturer, will build a 127,000-sq-ft addition to its branch plant at Hampstead, Md. Partial operation is expected as early as September.

Appoint Kenneth Gayle

Kenneth H. Gayle Jr., president of Ingalls Iron Works Co., Birmingham, was added to the Board of Associated Industries of Alabama.

Form New Association

The National Industrial Electronic Service Affiliates Inc. was formed in the interest of industrial electronic equipment users, equipment manufacturers and service technicians to make possible a pool of qualified industrial electronic technicians in all major industrial areas. The organization will service electronic devices in industrial plants.

Burroughs Adds New Department

Burroughs Adding Machine Co., Detroit, established an electronic instruments division in Philadelphia to produce electronic laboratory apparatus and other special devices.

Limestone Plant Planned

U. S. Steel Corp. plans to establish a limestone quarrying and processing plant at Cedarville in Michigan's upper peninsula. Construction will begin in April on the project expected to produce about 3 million tons of metallurgical quality limestone a year.

High Proportion of Sales

Webster-Chicago Corp., Chicago, sold 41 per cent of all tape recorders made during 1952, sales representatives said. The report is based on records of the Armour Research Foundation which licenses all tape recorder manufacturers.

Award Vermejo Project Contract

A Bureau of Reclamation contract for construction of three dams and a dike on the Vermejo Project near Maxwell, N. Mex., was awarded to Colorado Constructors Inc., Denver, on a low bid of \$850,212. This contract is the first to be awarded in the rehabilitation program for the 65-year-old project providing irrigation water for 7200 acres.



CARL L. IPSEN

... v. p. of Furnace Manufacturers

C. L. Ipsen Named to Association

Carl L. Ipsen is the new executive vice president of the Industrial Furnace Manufacturers' Association. He retired from General Electric Co. to accept the position. With G. E. for 39 years, he served as manager of the company's industrial heating department from 1947 until 1951 and then became chief of the Industrial Heating Equipment Section of the National Production Authority. During the past year he acted as chief consultant for the G. E. heating department.

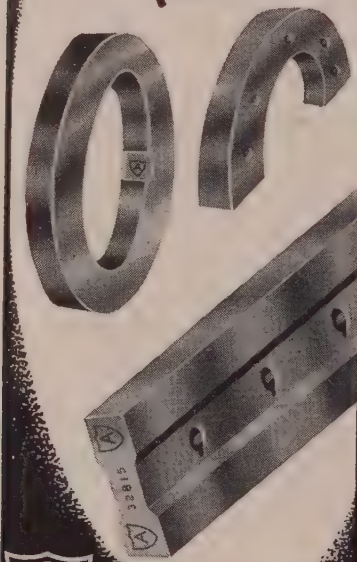
D. E. Makepeace Consolidates

On Apr. 1, D. E. Makepeace Co., Attleboro, Mass., will be consolidated with Union Plate & Wire Co., of the same city. D. E. Makepeace will serve as the operating division of the new organization which will retain the name of Union Plate & Wire Co.

Steel Founders Present Awards

Henning A. Forsberg, vice president, Continental Foundry & Machine Co., East Chicago, Ind., received the Lorenz Memorial Gold Medal of the Steel Founders' Society of America. In the society's annual meeting, G. A. Lillieqvist, research director and chief metallurgist of

MORE
TONNAGE
PER EDGE

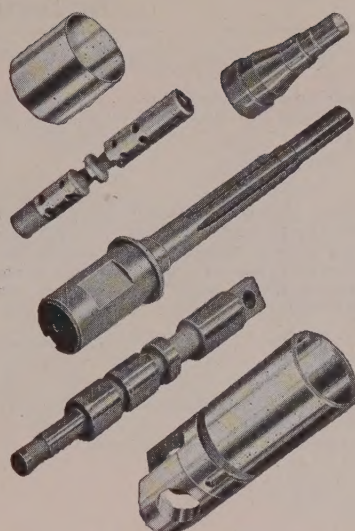


**AMERICAN
SHEAR KNIFE CO.**
HOMESTEAD • PENNSYLVANIA

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P RECISION PRODUCTION of H ARDENED AND GROUND S CREW MACHINE P RODUCTS

Representative Products

SPLINE SHAFTS—VALVE PLUNGERS—PUMP
SHAFTS—ENERGY CELLS (Lanova Type)—
CONTROL VALVES — ROTOR SHAFTS —
ROTOR LINERS — OUTER RACES — VALVE
TAPPET ROLLERS

OTTAWA STEEL PRODUCTS, INC.

GRAND HAVEN, MICHIGAN

A-1037



Above: For charging blast furnace.

EASTON experience covers all
types of skips for automatic dumping
at the top of an incline.

SKIP CARS

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH

Large or small jobs— PANGBORN BLAST CLEANING cuts maintenance cost and time!



Pangborn Blast Cleaning Machine—Cleans tanks, bridges, buildings, and other structures quickly and economically. Ideal for maintenance and other jobs, such as removal of dirt, scale, rust, etc. preparatory to painting. Six sizes, stationary or portable, from . . . \$170 and up.



Pangborn Blast Cabinet—Saves time and money in cleaning small metal parts . . . removing rust, scale, grime, old paint, etc. Produces smooth, clean surfaces on pieces up to 60" x 35" in size. Models from . . . \$319 and up.

Pangborn Unit Dust Collectors—Trap dust at the source. Minimize maintenance, allow reclamation of valuable material . . . \$286 and up.

Pangborn Hydro-Finish Cabinets—Remove directional grinding lines, hold tolerances to .0001". Reduce further finishing of tools, molds, dies . . . \$1410 and up.

Write for details on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment.

Pangborn
BLAST CLEANS CHEAPER
with the right equipment for every job

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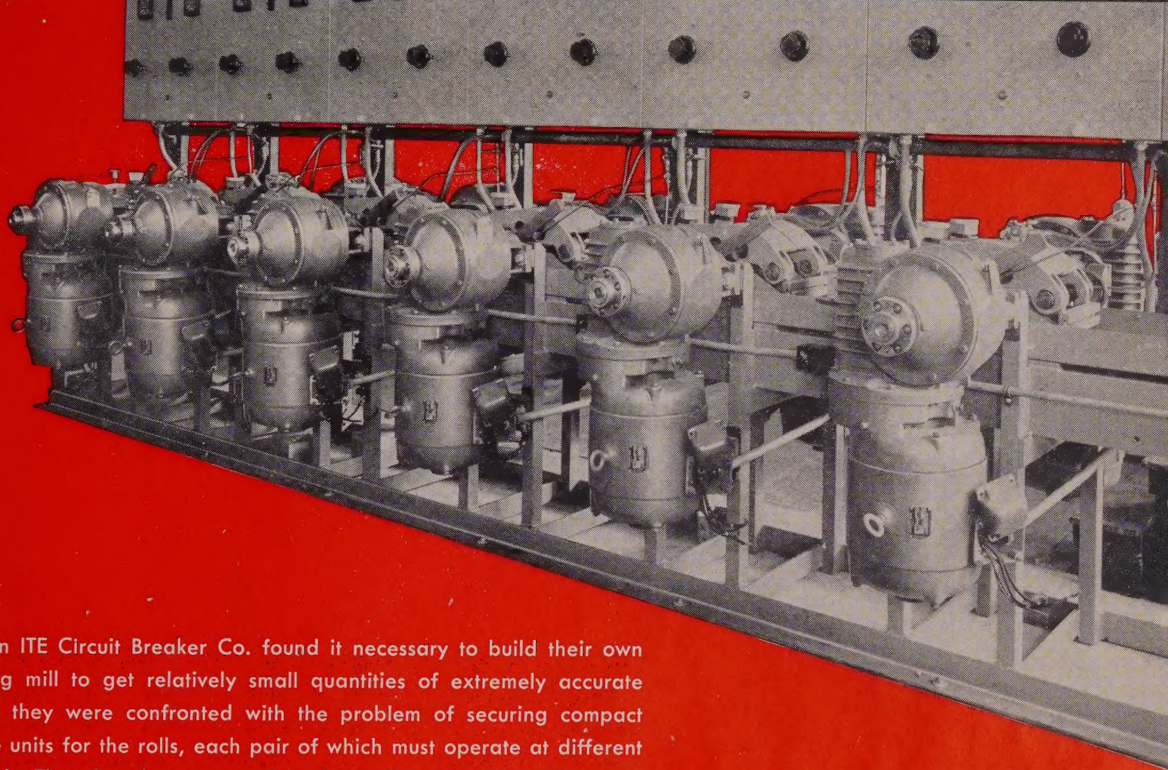
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When ITE Circuit Breaker Co. found it necessary to build their own rolling mill to get relatively small quantities of extremely accurate strip, they were confronted with the problem of securing compact drive units for the rolls, each pair of which must operate at different speeds. They found as many others have, that from Master's broad line of Gearmotors they could select standard units which would give them the RIGHT horsepower, the RIGHT shaft speed in one compact unit that they could use RIGHT where they wanted it.

Probably you will never design a rolling mill. But the next time you need motor drives for your plant or product, remember that Master Motors, available in thousands and thousands of types and ratings, give you a selection you can get nowhere else.

tough problem . . . easy solution

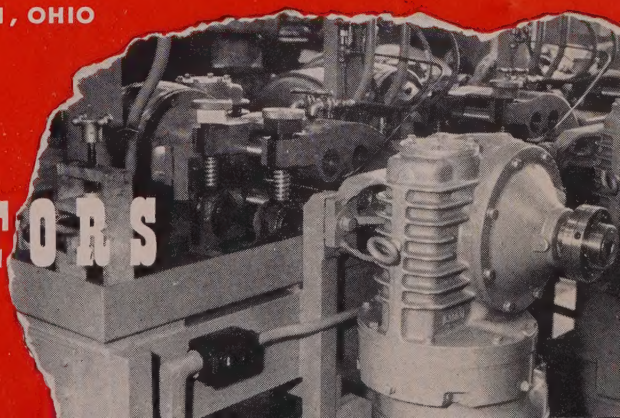
Open, enclosed, splash proof, fan-cooled, explosion proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 432 to 1 ratio . . . with electric brakes . . . with mechanical variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best motor drive for YOU.

Select the RIGHT power drive from Master's broad line and you can increase the saleability of your motor driven products . . . improve the economy and productivity of your plant equipment.

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



GEARMOTORS



World's biggest ladle crane trolley rides on TIMKEN® bearings

THIS trolley, built by The Alliance Machine Company, helps the world's largest ladle crane move tons of molten metal quickly and easily, with the utmost safety.

To insure smooth performance and greater availability, Alliance engineers have mounted each of the trolley's double-flange track wheels on Timken® tapered roller bearings.

The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Timken bearings

provide high capacity in a small space because of line contact between rollers and races. As a result, they carry the heavy loads on the trolley's wheels with capacity to spare. The wheels start quickly, turn smoothly, with minimum friction because of the true rolling motion and incredibly smooth surface finish of Timken bearings.

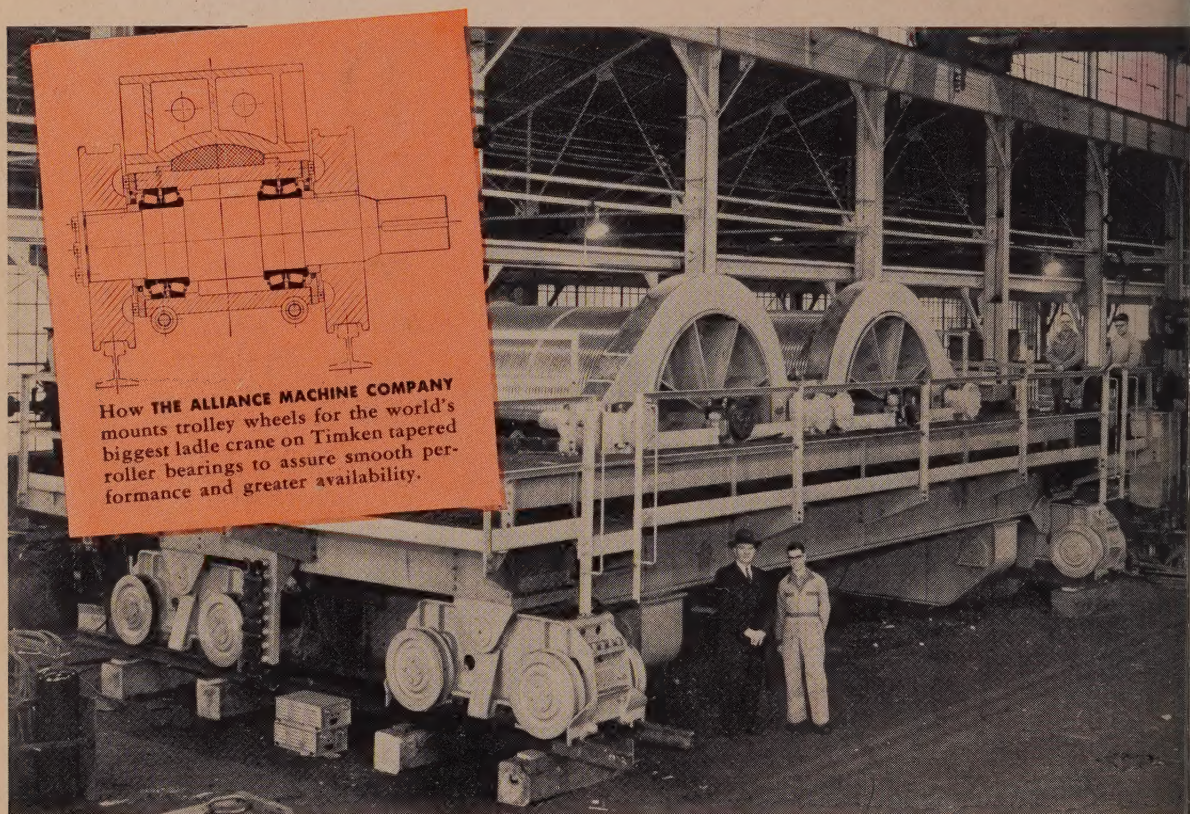
Timken bearings hold housings and shafts concentric. As a result, closures are more effective—dirt stays out, lubricant stays in. Main-

tenance and lubrication costs are held to a minimum.

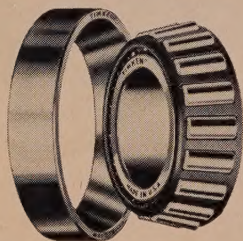
No other bearing can give you all the advantages you get with Timken tapered roller bearings. Specify them for the machinery you build or buy. Always look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



How THE ALLIANCE MACHINE COMPANY mounts trolley wheels for the world's biggest ladle crane on Timken tapered roller bearings to assure smooth performance and greater availability.



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



HARD ON THE OUTSIDE, TOUGH ON THE INSIDE

Rollers and races of Timken bearings are case-carburized to give a hard, wear-resisting surface and a tough, shock-resisting core. Result: longer bearing life.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION